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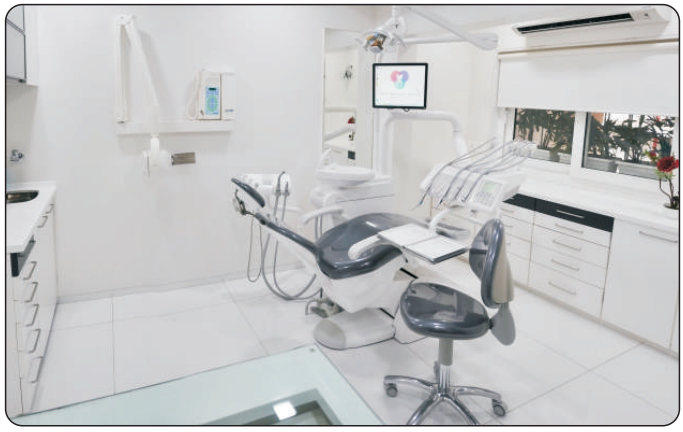

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EDITORIAL

Communication Skills Training (CST) In Medical Education

Kulkarni K K, Sarode V S****

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Introduction

Excellent communication skills are essential to medical professionalism[1]. Doctor patient communication is a major component of the process of healthcare.[2] Professional conversation between patients and doctors shapes diagnosis, initiates therapy and establishes a caring relationship[3]. Effective doctor patient communication can be a source of motivation, incentive, reassurance and support to patients[4, 5]. Patients want doctors who can skillfully diagnose and treat their sickness as well as communicate with them effectively[6]. The degree to which these activities are successful depends, in large part, on the communication and interpersonal skills of the physician[3]. Clinical communication is complex in nature, both personal and curricular factors influence how medical students master the relevant skills [1]. Communication skills in medicine, once considered a minor subject, are now ranked a core clinical skill. To integrate CST across the curriculum, it is essential to provide a consistent framework for teaching and evaluating communication skills that is evidence based[7].

Guidelines for teaching and assessment of CST:

Faculty meeting at a consensus workshop during the international conference on teaching communication in medicine (Oxford, July1996) generated a series of recommendations for developing and implementing teaching and assessment programs. The points were refined in 'Communication in health care conference' organized by NIVEL. (Amsterdam,1998)[8]

The eight recommendations highlighted in this consensus are 1)Teaching and assessment should be based on a broad view of communication in medicine. 2) Communication skills teaching and clinical teaching should be consistent and complimentary. 3) Teaching should define and help students achieve, patient centered communication tasks. 4) Communication teaching and assessment should foster personal and professional growth. 5) There should be a planned and coherent framework for CST. 6) Student's ability to achieve communication tasks should be assessed directly.7) CST and assessment programs should be evaluated. 8) faculty development should be supported and adequately resourced.

The report of 'Kalamazoo II' conference held in April 2002 summarizes the methods and tools used by educators, evaluators and researchers in the field of physician-patient communication[3]. Communication skills are the performance of specific tasks and behaviors such as obtaining a medical history, explaining a diagnosis and prognosis, giving therapeutic instructions and counseling. Interpersonal skills are inherently relational and process oriented; they are the effect communication has on another person such as relieving anxiety or establishing a trusting relationship. This report reviews three methods for assessment of communication and interpersonal skills. 1) Checklists of observed behaviors during interactions with real or simulated patients. 2) Surveys of patients experience in clinical interactions. 3) Examinations using oral, essay or multiple choice response questions.

Practice of CST in different medical institutes:

Many studies have shown that trained residents in CST were superior to untrained residents in knowledge, attitudes, such as confidence in psychological sensitivity and interviewing of patients[9]. Differences include reduced verbal dominance, increased use of open ended questions, increased empathy, increased partnership building and problem solving for therapeutic regimen adherence [10].

CST is being followed by many medical institutes all

over the world. The Royal College of physicians and surgeons of Canada guidelines on general standards of Accreditation require mandatory assessment of residents communication skills from the year 2000 onwards[11]. The new medical curriculum at Ghent University (1999) implemented e communication curriculum. The training starts with simple basic skills but gradually slips into medical communication or consultation training and results in communication in different contextual situations or with special groups of patients[12]. Communication skills are now listed as core competencies in training programs at The Royal New Zealand college of general practitioners[13]. Lectures, Audiotapes, videotapes, standardized patients (SP), Role Plays are the different methods used for teaching C. S. T. in different institutes.[14,15,16]

OSCE, questionnaires, MCQ, Feedback are commonly used methods for assessments of CST.[3, 7, 15, 16]

Limitations:

CST is ongoing process requiring practice and feedback. In order to introduce a sustained, coherent and integrated CST program in to medical curriculum; student and faculty interest as well as sufficient administrative and financial support is required. It is not being addressed formally or informally in many medical institutes. Or it is formally addressed in early years of medical education and is generally not reinforced in residency years. Also faculty members do not understand how to assess learners performance in these skills so it is not adequately evaluated.[7]

In spite of this, there is growing acceptance of the need to teach and assess communication skills in medical education. Offering a variety of learning opportunities to faculty including workshops, outside experts, access to resources will facilitate faculty development. [7]

Our experience in B. J. G. M. C. Pune -

In India, CST is introduced in medical curriculum. Medical Council of India published 'Reforms in Undergraduate and Post-graduate Medical education Vision 2015' in March 2011.

As per the norms, advised in the Vision Document, MUHS has introduced 'Communication Skills, Professionalism & Ethics in Medical Education in 2nd & 3rd M.B.B.S. syllabus' with effect from academic Year 2011-12 by notification - MUHS Academic notification no. 16/2011 dated 30/8/2011. Syllabus modification was done in the Year 2012-13 [17].

In BJ GMC, Pune, we have incorporated CST in curriculum from First MBBS. Didactic lectures on 'Soft Skills and Etiquettes' and 'Basic Communication Skills' are conducted for First MBBS students. For Second MBBS students, one day workshop on following modules is conducted -

Rapport building, History taking, Information, Educating about the disease, Written communication and Counseling.

While conducting these modules, we adapt techniques like Lectures followed by the Role Plays by the teachers, Group Discussions, Video Clips etc. for teaching CST.

Skill assessment of the students is done by role play performance on given scenarios and by OSCE Questionnaires. Knowledge assessment of the individual student is done by MCQ (Pre and Post test) and the feedback forms.

There are certain limitations experienced while conducting the workshop like Time constraints (only 1 day allotment in second MBBS), Lack of technical resources (few video clips, sound system and multimedia), less number of trained and interested faculty members.

To overcome these limitations, we are working with the other departments for infrastructure and the technical resources. Additionally, we are conducting regular training programs for the new faculty members.

We also have made the future plans to sensitize the teaching faculty about skills training to undergraduates including third MBBS students and Interns, as per MUHS guidelines. Making Blue print of teaching modules and regular updating is also under way.

Conclusion

CST training is a core clinical skill, requiring ongoing training, practice and feedback across the continuum of medical education. It is through the efforts, involvement and effective role modeling of faculty skilled in CST that medical students' competency in communication skills will increase and better prepare them for the demands of contemporary medical practice.[7]

We are sure that the efforts being taken at BJGMC for CST will bring in positive substantial impact on the behavioral, communication skills and attitude of the future doctors.

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REVIEW ARTICLE

Immunisation As An Major Preventive Strategy In Geriatrics - An Overview

Anita Basavraj*, Kazi W., Kadam D. B.*****

**Associate Professor, **Resident, ***Professor & Head, Department of Medicine, B.J.G.M.C. & S.G.H., Pune.*

Population ageing emerged on a world wide scale for first time in history within last century. The overall number of children remained relatively stable, but explosive growth has occurred among elderly population. Asia has about 10% people who are older than age 60 years, with the population giants close to average, China (12%) and India (7.7%)[7]. There has been a sharp increase in the elderly population in India in recent decades. At present, 7.7% of India's population is over 60 years of age. Composition of 60+ aged female population is higher in all of the bigger States. In rural areas population in the age group 60+ constitutes 8.1 percent of the total population[1].

In India the elderly people suffer from dual medical problems i.e. communicable and non communicable. A decline in immunity along with physiological changes lead to increased risk of infectious diseases in elderly. Amongst various diseases to which elderly are prone, some can be prevented by administration of appropriate vaccines. But there is no national immunization schedule for elderly in India, as compared to western countries. The benefits of vaccination need to be extended beyond traditional childhood period and new approach of 'life- course immunization' for including larger age groups such as adolescent and elderly is being contemplated globally, with an argument that not offering the benefits of available safe and effective vaccines is an ethical issue[2].

Among the vaccine-preventable diseases, the geriatric population is particularly susceptible to pneumococcal infection, influenza, tetanus and herpes zoster. These diseases are among the major causes of morbidity and mortality among the elderly and are responsible for a large number of deaths and hospitalizations. Elderly patients have been shown to have an increased risk of hospital-acquired infections[3]. The following discussion on adult vaccination is mainly based on: (1) "Expert Group Meeting for evolving Consensus Recommendations on Adult Immunization in India" which was jointly organized in December 2008 by the Association of Physicians of India (API) and the Department of Medicine, All India Institute of Medical Sciences (AIIMS) to address this issue and (2) the latest Centers for Disease Control and Prevention Advisory Committee on Immunization Practices (CDC ACIP) guidelines 2012[4].

Common infectious diseases in elderly population:

Amongst the vaccine preventable diseases, the geriatric population is particularly susceptible to pneumococcal infections, influenza, tetanus and herpes zoster. These diseases cause major morbidity and mortality and are responsible for a large number of deaths and hospital admissions.

In the study carried out in B.J. Govt. MEDICAL COLLEGE, PUNE, deaths of 100 elderly from October 2014 to December 2014 were studied. Among the 100 patients studied 57 deaths were attributed to infectious causes. After removal of confounding factors like aspiration pneumonias and ventilator associated pneumonias, 33% were due to community acquired non hospital based infections. Sepsis and septic shock were terminal events in majority of these cases. The four major vaccine preventable diseases (Community acquired Pneumonia, tetanus, Hepatitis B, Herpes zoster) accounted for 22 out of these 33 patients.

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Cause	no. of pts
Community Acquired Pneumonia	18
Tetanus	1
Hepatitis B	2
Herpes zoster	1
Acute gastroenteritis	4
Urinary tract infection	7
VAP / aspiration pneumonia	24
Total	57

Table 1: Retrospective observational study.

Hence, it was confirmed that community acquired infectious diseases are the leading cause of mortality among geriatric patients needing hospitalization and appropriate immunization strategies might significantly reduce mortality in this age group.

Pnuemococcal Infection

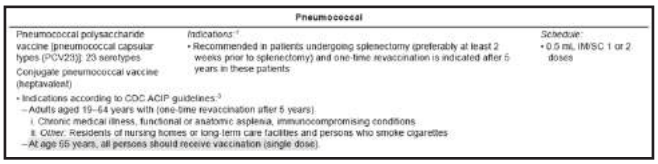
S. pneumoniae is a major cause of pneumonia, meningitis and bacteremia worldwide. Among adults in industrialized countries, pneumococcal pneumonia still accounts for at least 30% of all cases of community-acquired pneumonia admitted to the hospital, with a case fatality rate of 11-44%[9]. In a study done in India, S. pneumoniae was identified in 35.8% of the isolates for community-acquired pneumonia [10].

It has also been observed that during influenza seasons, the risk of secondary pneumococcal infection also increases. However, the exact burden of invasive pneumococcal infections in adults in developing countries like India is poorly known, mostly due to failure to obtain blood cultures from patients with pneumonia [9].

The disease is increasingly showing a less favorable outcome and invasive diseases like bacteremia and meningitis are becoming common. Pneumococcal polysaccharide vaccine has been licensed for use in the United States for 30 years, and two-thirds of the elderly population in the United States have received this vaccine[11].

The vaccine is reported to be 93% effective in preventing disease in immuno-competent adults aged below 55 years and this falls to 46% in those over 85 years of age.

Although, there have been controversial results regarding the efficacy of pneumococcal vaccine in older adults, studies have demonstrated that the vaccine has a protective effect against invasive disease and reduces the number of hospital admissions and overall deaths in the elderly age group. During the influenza outbreaks, the benefits of pneumococcal and influenza vaccinations were additive [12].


Pneumococcal

Pneumococcal polysaccharide vaccine [pneumococcal capsular types (PCV23)]: 23 serotypes Conjugate pneumococcal vaccine (heptavalent)	*Indications:*[1] • Recommended in patients undergoing splenectomy (preferably at least 2 weeks prior to splenectomy) and one-time revaccination is indicated after 5 years in these patients	*Schedule:* • 0.5 mL IM/SC 1 or 2 doses

• Indications according to CDC ACIP guidelines:[3]
– Adults aged 19–64 years with (one-time revaccination after 5 years):
i. *Chronic* medical illness, functional or anatomic asplenia, immunocompromising conditions
ii. *Other:* Residents of nursing homes or long-term care facilities and persons who smoke cigarettes
– At age 65 years, all persons should receive vaccination (single dose).

CDC recommends that all elderly adults should receive a single dose of pneumococcal polysaccharide vaccine. Revaccination should be strongly considered after six years of the first dose for those at highest risk of fatal pneumococcal disease (such as asplenic patients) or rapid decline in antibody levels (e.g., transplant recipients or those with chronic renal failure or nephrotic syndrome [14].

WHO recommends PPV23 (Pneumococcal Polysachharide Vaccine) for people over 65 years of age, particularly those living in institutions. Though studies have shown that PPV23 is effective in preventing invasive pneumococcal disease, but it is not established whether it has a significant protective effect against pneumonia. A recent meta-analysis concluded that there was little evidence of PS vaccine protection against pneumonia among elderly or adults with chronic illness[9].

In India, the API (Association of Physicians of India) expert group states that the available evidence is insufficient to recommend routine use of PPV in adults, although PPV is efficacious in preventing invasive pneumococcal disease among adults. Pneumococcal vaccination is recommended only in patients undergoing splenectomy and one-time revaccination is indicated after five years in these patients. The Group also stated that currently, there is no evidence to support the efficacy of PPV in preventing invasive pneumococcal disease in populations considered at high-risk, such as healthy elderly (aged 65 years and above), particularly those living in institutions; patients suffering from chronic organ failure; patients with diabetes mellitus and nephrotic syndrome and mentioned that these guidelines might change with the availability of better pneumococcal vaccine preparations or more evidence

regarding the efficacy/cost-effectiveness of PPV [16].In India, the Invasive Bacterial Infection Surveillance (IBIS) network and South Asian Pneumococcal Alliance (SAPNA) have been involved in collection of important data regarding serotype distribution and antimicrobial resistance of pneumococcal infection. The IBIS data has shown a good coverage of adult serotypes in India by 23-valent pneumococcal vaccine. A continued surveillance of IPD in adults is necessary to monitor changes in serotype distribution and antimicrobial resistance pattern overtime in order to determine the vaccine requirements[17]. According to one study pneumococcal vaccination does not appear to be effective in preventing pneumonia, even in populations for whom the vaccine is currently recommended.

Influenza

Influenza is recognized as a significant cause of morbidity and mortality among older adults. Influenza is a viral infection caused by influenza viruses belonging to orthomyxoviridae family, of which there are four genera - influenza viruses A, B, C and thogotoviruses. Influenza A virus causes epidemics most years, influenza B causes a less severe illness and spreads less extensively and influenza C causes only acute pharyngitis. The disease burden for influenza has been studied well in developed countries. In the United States, approximately 80-90% of deaths during epidemics occurred in adults aged 65 years or over. The rates of hospitalization and death are increasing as the population ages. In contrast, the influenza burden in India has not been documented properly. Although there is lack of exact data relating to impact of influenza in India and other south-east Asian countries, there is evidence of presence of virus throughout Asia. The emergence of pandemic strains in the region and the opportunity for new strains to emerge make it likely that there is an unrecognized burden of influenza in this part of the world [18].

Influenza[a]

	Indications:	Schedule:	Contraindications:
Trivalent inactivated influenza vaccine (TIV)	• All people 6 months of age and older Especially: – Persons with chronic medical illness, immunocompromised individuals having high risk of severe influenza – Pregnant women – People 65 years and older	• Single dose IM/ intradermal (ID) 0.5 mL annually	• Moderate-to-severe illness with fever • History of GBS following influenza vaccine • History of immediate hypersensitivity reaction to eggs (TIV/LAIV) • Allergic to any of the ingredients or formaldehyde, gentamicin sulfate or sodium deoxycholate
Live attenuated influenza vaccine (LAIV)	• Healthy nonpregnant individuals ages 2–49 years	• Intranasal (IN)	Contraindications: • Age ≥ 50 years or below 2 years • Pregnancy • Immunosuppression • Chronic medical conditions • Close contact with severely immunosuppressed

- On February 23, 2012 the WHO recommended that the Northern Hemisphere's 2012-2013 seasonal influenza vaccine be made from the following three vaccine viruses:
  - An A/California/7/2009 (H1N1)pdm09-like virus
  - An A/Victoria/361/2011 (H3N2)-like virus
  - A B/Wisconsin/1/2010-like virus (from the B/Yamagata lineage of viruses).
- While the H1N1 virus used to make the 2012-2013 flu vaccine is the same virus that was included in the 2011-2012 vaccine, the recommended influenza H3N2 and B vaccine viruses are different from those in the 2011-2012 influenza vaccine for the Northern Hemisphere.
- In the absence of epidemiological surveillance regarding the influenza serotypes in our country, the Expert Group observes that *presently the use of influenza vaccine in India is not recommended.*[1]
- Efficacy of TIV is 70–90% and 36–70% among healthy young people and elderly population respectively when the "match" between the vaccine and the circulating strains is close.

Currently, a trivalent inactivated vaccine is used which contains two Influenza A and one Influenza B virus. According to current (2005) WHO recommendations, existing internationally licensed vaccines contain the two A subtypes H3N2 and H1N1 and one type B virus [19]. The vaccine confers 60–90% immunity in children and adults but less for elderly whose waning immune systems mount a lesser response to initial vaccination. Studies conducted all over the globe have reported debatable results regarding the efficacy of the influenza vaccine[20]. Although the vaccine is less efficacious in preventing clinical illness in older adults as compared to younger adults, it has been proved that it lessens the severity of infection and is 80% effective in preventing death in this population[21]. It has also been demonstrated that during the influenza season, the number of hospital admissions among the elderly may double if they are not vaccinated. Despite the benefits of influenza vaccine, vaccination against influenza is a neglected issue in our country. Even in developed countries like the United Kingdom and the United States, influenza vaccination program is a partial success. In the United States, the vaccination coverage of influenza vaccine falls short of the goal of 90% coverage due to various reasons such as shortage of supply[22]. Such issues need to be addressed. As per the recommendations of CDC, all adults older than or equal to 65 years of age should receive influenza vaccine annually[14]. WHO also recommends annual immunization of people at risk as the best and most cost-effective strategy for reducing influenza-related morbidity and mortality. In 2003, the World Health Assembly urged members of states to reach a target of seasonal influenza vaccination coverage of the elderly population of at least 50% by 2006 and 75% by 2010 [23].

In India, primarily because of absence of epidemiological surveillance regarding the influenza serotypes in our country, the expert group of API presently does not recommend routine use of influenza vaccine in India. However, individuals can take the vaccine if they can afford its cost [16].

Tetanus

The incidence of tetanus among adults is far higher than among children. While high DPT coverage ensures that most children are protected, immunity against tetanus wanes over time, leaving older adults susceptible to infection. Particularly vulnerable are elderly persons,

who not only lack immunity but are also liable to injuries. In the developed countries tetanus has become a geriatric disease with majority of cases occurring in persons aged 60 years or older [18,22]. Notification trends from countries with well- established immunization programs show increasing tetanus cases among the elderly, corresponding to sero-epidemiologic data showing declining immunity with advanced age. An Australian study examining the trends since 1993 reported that 62% (36/58) of notifications, 44% (67/151) of hospitalizations and 83% (10/12) of deaths were in people aged over 65 years. Taking into account higher vaccine coverage at 65 years versus the current recommended age in Australia of 50 years, it was estimated that routine funded tetanus vaccine would prevent 9% more hospitalizations and 28% more deaths [25]. In the United States it has been indicated that only 60% of the adult population have serological protection against diphtheria and 72% against tetanus. Among adults older than 70, only 30% had serological immunity to either disease [26].

TT/Td/Tdap (Diphtheria, pertussis, tetanus)[2]

Tdap (tetanus toxoid, diphtheria toxoid and acellular pertussis)	*Indications:* - In all adults not immunized earlier - Contacts with infants suffering from diphtheria or pertussis and last Td vaccine dose > 2 years ago - Adults who are in close contact with infants - Health care personnel - During pertussis outbreak - In pregnant patient: – Td within 10 years: Booster in immediate postpartum period – Td > 10 years: Booster in 2nd or 3rd trimester – Not immunized: 3 doses in 2nd or 3rd trimester - Postexposure prophylaxis: – Minor/uncontaminated wound: One booster dose of TT given if last dose taken > = 10 years back – Major/contaminated wound: One booster dose of TT given if last dose taken more than 5 years back	*Schedule:* - 0.5 mL intramuscular (IM) deltoid - Primary: 3 doses; 0, 1, 6–12 months - For contacts: Single dose 2 weeks before contact - Outbreak: Single dose if 2 years or more have elapsed from the last Td - Vaccination - Booster: Once every 10 years	*Contraindications:* - History of anaphylaxis - History of encephalopathy not attributable to an identifiable cause within 7 days of pertussis vaccine - Moderate to severe acute illness - Any unstable neurological condition *Precaution:* - Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of TT containing vaccine - History of Arthus reaction with previous dose of TT containing vaccine and/or DT containing vaccine, including MCV4[**]; defer vaccination until at least 10 years have elapsed since the last dose - Pregnancy

- For postexposure prophylaxis tetanus booster (TT) may suffice if complete primary vaccination with tetanus toxoid is done.
- But a wounded adult patient who cannot confirm receipt of primary vaccination or a tetanus booster during the preceding 5 years should be vaccinated with tetanus and diphtheria toxoids vaccine (Td) or tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine (Tdap); adults aged > 64 years should receive Td instead of Tdap which is recommended for 19–64 years of age group.

These figures are likely to be much higher in developing countries like India, where notification of tetanus cases in the geriatric age group is lacking and immunization against tetanus in this age group is virtually unheard of. According to the recommendations of CDC, all elderly adults (older than or equal to 65 years) should have completed a primary series of diphtheria and tetanus toxoids and thereafter should receive a booster dose every 10 years. dT should be used to provide protection against both diseases. Persons with unknown or uncertain histories of receiving diphtheria or tetanus toxoids should be considered unvaccinated and should receive a full three-dose primary series of dT [14]. In India, the API expert group recommends T dap for all adults not immunized earlier. For adults in the age group of 18 to 64 years who have completed their childhood vaccination schedule, a booster dose of Td vaccine is indicated once every 10 years till the age of 65 years [16].

Hepatitis B

India has intermediate endemicity for hepatitis B. The reported prevalence of hepatitis B in India ranges from 2 to 10%, being below 8% in most studies[27,28]. Based on an average HBsAg positivity rate of 5%, the total HBV carrier pool in India is estimated at 50 million. Acute HBV infection can lead to one of several outcomes. Most patients with acute infection recover from the infection in a few weeks to a few months and become immune. A small minority of patients with acute HBV infection develop a serious illness, known as fulminant hepatitis, which is fatal in a large majority within days or weeks of onset of symptoms. This is more common especially in the elderly where mortality rates may be as high as 10 to 15% [27].

Some persons with acute HBV infection develop a chronic infection and most of the serious outcomes due to HBV infection occur in these persons. Persons with chronic HBV infection may be asymptomatic for decades after infection; however, these persons are at high risk of eventually developing liver cirrhosis and/or primary liver cancer. A vaccine is available for prevention of HBV infection. This vaccine is highly effective and is entirely safe, except for minor local adverse effects. The protection provided by the vaccine is long lasting. More than 100 countries have already incorporated this vaccine in their national immunization programs. A review of available studies on economic analysis of hepatitis B vaccine in India's national immunization program shows that this vaccine is highly cost-effective in terms of cost per life year gained and cost per QALY gained [27].

Since mortality from acute hepatitis is more in elderly people, this age group should be protected from hepatitis B. However, people over 60 years of age exhibit a decreased antibody response to hepatitis B vaccination. Among all age groups, the overall effectiveness of hepatitis B vaccine in preventing infection is 80 to 95%; among those 50 to 59 years of age, effectiveness is 70%; and it further decreases to 50% in adults older than 60 years[31]. Hence, it has been recommended that vaccination against hepatitis B infection in the elderly is required only if he/she falls into any one of the high risk categories[13,31]. Elderly persons who are public safety

workers and those who are exposed to blood in the workplace and healthcare workers should be vaccinated against HBV infection. At the same time, if anyone wishes to take the vaccination against HBV infection with his/her own funds, irrespective of the risk, the individual's decision should be respected [32].

Hepatitis B virus[3]

Recombinant vaccine (Engerix-B/ Recombivax HB)	*Indications:*	*Schedule:*
	• All unvaccinated adults at risk for HBV infection and all adults seeking protection • Patients at risk are: – Intravenous (IV) drug users – Household contacts of persons with chronic HBV infection – Occupational exposure to HBV – HIV-seropositive – Chronic liver disease – Chronic kidney disease (CKD) – Diseases where blood products or multiple blood transfusions are required – Sexual exposure: Patients with sexually transmitted disease (STD), MSM*, CSW#, promiscuous partners, partners of HBsAg-positive persons – Postexposure prophylaxis: – Single IM dose of hepatitis B immunoglobulin (HBIG) 0.06 mL/kg as soon as possible, followed by full course vaccination	• Engerix-B 20 µg (1 mL) IM (deltoid) at 0, 1, 2 and 12 months • For patients with CKD and other immunosuppressed patients, 40 µg (2 mL) is administered at 0, 1, 2, and 6 months • Routine boosters not recommended except in immunocompromised who have lost detectable antibodies and persons who are at high risk of repeated inoculation, e.g. CKD patients requiring hemodialysis

Herpes Zoster

Another infection to which the geriatric age group is susceptible is the Varicella Zoster infection. Data from Japan have reported that the incidence is as high as 27% in those aged 60 years old or older [33]. In the United States, approximately 1,000,000 new cases occur annually. The incidence and severity of herpes zoster (HZ) and post-herpetic neuralgia (PHN) increase with age in association with an age- related decline in varicella-zoster virus (VZV)- specific cell-mediated immunity (VZV-CMI). In most of the cases, herpes zoster causes debilitating pain, and when PHN develops, the pain can last for months or even years. Other complications include involvement of the eye that can threaten sight, bacterial super infections, and disfiguring facial scarring[34].

There is a heightened risk of pulmonary and nervous system complications. Cardio vascular complications have also been reported [35]. Research has demonstrated that HZ vaccine can significantly reduce the morbidity due to HZ and PHN in older adults[36]. Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination of all persons aged more than or equal to 65 years with one dose of zoster vaccine[14]. Prevention of zoster and its sequelae is particularly important among older persons because they experience the highest incidence of zoster and PHN. They are also most likely to suffer social and psychological consequences from PHN. Although effective antiviral medications for treatment of zoster are available, administration must be initiated within 72 hours of rash onset for maximum benefit. Many patients might not obtain such rapid diagnosis and treatment, and even when they do, the treatment is only partially effective at alleviating the symptoms and shortening their duration. Besides this, available treatments for PHN often do not completely alleviate the pain and might be poorly tolerated by older patients. Available evidence suggests the cost- effectiveness of zoster vaccine is within the range of some other public health interventions. In a large, placebo-controlled clinical trial, the zoster vaccine reduced the overall incidence of zoster by 51.3% and the incidence of PHN by 66.5%. Although the vaccine was more efficacious in persons aged 60 to 69 years, substantial efficacy against zoster was observed in persons aged more than or equal to 70 years, and PHN was prevented in older age groups[34]. In view of the increasing numbers of elderly persons in the population and the poor outcomes of PHN treatment, vaccination against HZ at approximately 60 years of age appears to be an appropriate strategy[36,37]. However in India, the expert group presently does not recommend herpes zoster vaccine in adult population, with or without comorbid conditions due to lack of Reliable epidemiological data from the country regarding the burden of herpes zoster [16].

Zoster (Shingles)[7]

Live, attenuated varicella-zoster virus (VZV) (Oka strain)	*Indications:*	*Schedule:*	*Contraindications:*
	• Adults aged 60 years and older regardless of whether they report a previous episode of herpes zoster • Persons with chronic medical illnesses	• Single 0.65 mL dose SC in the deltoid region	• Age < 60 years • Pregnancy • Known severe immunodeficiency • History of immediate hypersensitivity reaction to gelatin or neomycin

• Expert Group observes that presently herpes zoster vaccine *is not recommended for use in adult population*, with or without comorbid conditions as reliable epidemiological data are not available from India regarding the burden of herpes zoster.[7]
• Zoster vaccine with 18 times the viral content of the varicella vaccine decreases the incidence of shingles by 51%, the burden of illness by 61% and the incidence of postherpetic neuralgia by 66%.

Chicken Pox

According to the recommendations of CDC, all adults without evidence of immunity to varicella should receive two doses of single- antigen varicella vaccine, if not previously vaccinated, or the second dose if they have received only one dose unless they have a medical contraindication [38].

Hepatitis A

In developing countries like India, where Hepatitis A is endemic, most (95%) of the adults acquire immunity during adolescence or early adulthood. In these countries, Hepatitis A vaccination is not recommended for routine immunization. However, if one is suspicious of one's immune status, single-antigen vaccine formulations should be administered in a 2- dose schedule at either 0 and 6 to 12 months (Havrix®), or 0 and 6 to 18 months. Other indications include medical indications like persons with chronic liver disease and persons who receive clotting factor concentrates. There are certain occupational indications also which include

persons working with hepatitis A virus (HAV)-infected primates or with HAV in a research laboratory setting[14,38]. In developed countries, hepatitis A vaccine is recommended for persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A[38].

Issues Regarding Immunization In Elderly Age Group

The myth that vaccination is given to children only should be eradicated. As the life expectancy is increasing, the numbers of older persons over the age of 60 years are also increasing and they need to be protected. Sooner the preventive measures are applied better the results obtained. The elderly population is also susceptible to a range of vaccine preventable infections. Geriatric immunization can substantially reduce the burden of disease and mortality in this population. However, there are a number of limiting factors for giving recommendations about these vaccines. There are certain key issues to be considered before introducing a vaccine. These include:

1. Policy issues 2. Vaccine efficacy and safety 3. Economic and Financial issues 4. Behavioral and attitudinal issues. It is noticeable that there is under appreciation of the importance of vaccine-preventable diseases in the adults.

The CDC recommends immunization against pnumococcal pneumonia, influenza, tetanus and herpes zoster for adults over 65 years of age .WHO also recommends PPV for people over 65 years There is an influenza vaccine program in developed countries. However, there are no such recommendations in India as yet. The expert group of Association of Physicians of India quotes lack of data as a reason for not recommending vaccines for the geriatric age group in India. Much work is, therefore, required to provide simplified, inexpensive and valid methods for obtaining crucial data at the country level, such as the burden and costs of disease.

When the burden of vaccine preventable diseases is substantial, initiating vaccination in appropriate patients could save many lives and cut medical costs. The lack of an adult immunization program in India is far reaching. There is a need for the experts and decision makers to join in deliberations and discuss future strategies in this regard.

Strength And Limitations:

Vaccines for influenza, pneumococcal pneumonia, and tetanus have preventive efficacy rates approaching 90%. Such vaccines are relatively safe, with very few contraindications and a low rate of adverse reactions. Most non-vaccinated individuals either are not offered vaccination, do not know that such vaccines are available or have refused vaccination. Health care workers must be immunized to prevent transmission of a potentially lethal illness to the population they are caring for[6].

Administration Of Vaccines:

All vaccines are administered intramuscularly in the deltoid muscle. Pneumococcal vaccine and influenza vaccine may be administered at the same time, (by separate injection in the other arm) without an increase in side effects or decreased antibody response to either vaccine. Tetanus-diphtheria toxoid (Td) or tetanus, diphtheria, pertussis (Tdap) booster also may be administered concurrently with other vaccines[6].

Recommended Immunization Practices : [6]

For the Older Adult Patient: (1) Try to obtain patient's immunization history. Check medical records to verify prior vaccinations. Note any history of neurological or hypersensitivity reactions. (2) Educate the patient on vaccine-preventable diseases and the importance of vaccination. Offer vaccination as indicated. Patients and their families often have misconceptions regarding immunization. (3) Provide clear documentation of vaccination provided to minimize risk of unnecessary duplication. (4) Follow the following guidelines recommended by the Department of Health and Human Services (DHHS), Centers for Disease Control (CDC):

- Give influenza vaccine annually, starting October and ending February. This refers to the intramuscular trivalent inactivated virus standard or high-dose vaccine. The live, intranasal flu vaccine is indicated only for persons ages 5-49 and is contraindicated in the geriatric population. Consult with an allergist if the patient has an egg allergy.
- Give pneumococcal vaccine once after the age of 65 with a revaccination after 5 years if diseases such as chronic renal failure, chronic immunosuppression, malignancies, and functional or anatomic asplenia are present. Give one-time revaccination for patients older than 65 years old if

they were previously vaccinated more than 5 years previously and were aged less than 65 years at the time of initial vaccination. ● Provide Tetanus-diphtheria toxoid (Td) as a booster shot every ten years to those who have either completed the immunization series during childhood or teen years and have not received a booster dose in the last 10 years. If the patient has never been vaccinated, administer 0.5 mg intramuscularly twice with a 1-2 month interval and an additional dose 6-12 months later. If the patient is in contact with a child less than 12 months, then tetanus, diphtheria, pertussis (Tdap) is recommended over Td. (5) In selected patients aged 60 years or more, vaccination against herpes zoster (shingles) has decreased the incidence of herpes zoster and postherpetic neuralgia by 51% and 67% respectively. (6) Certain subsets of the geriatric population may require vaccinations for Hepatitis A, Hepatitis B, meningococcal disease, varicella and for measles, mumps, rubella (MMR), due to certain health problems, occupations or risks posed by lifestyles. Furthermore, if such patients travel, it would be advisable to offer relevant vaccines such as yellow fever vaccine.[6]

Suggested immunization schedule for elderly in India:

Vaccine	Schedule
Influenza	Flu vaccine every year
Tetanus	1 dose Tdap followed by dT booster every year
H. zoster	1 dose
Pneumococcal	PCV13: 1dose
	PPSV23: 1 or 2 doses
Recommended if not taken during childhood	
Hep A, HepB	2 and 3 doses respectively
Meningococcal	1 or more doses
Chickenpox	2 doses
Hib	1 or 3 doses

(based on CDC 2014 recommendations)

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REVIEW ARTICLE

Intricacies Of Complementary Feeding - A Delicate And Sensitive Issue For Prevention Of Malnutrition

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Introduction

A) Importance Of Nutrition:

Growth and development is a complex process, which begins at conception and continues until cessation at maturity[1, 2]. During this process, any obstacle can result in impairment of growth and development. Nutrition retains its paramount importance for the growth and development, just as equally as its requirement for normal physiological activities[3].

The basic necessities for human life like food, clothing, shelter, sickness care and love are the same in all cultures; yet the infant caring practices and resources vary tremendously, by differences in the individual traditions and cultures amongst families and communities. There are many misconceptions and confusions in the general population concerning the dietary requirements of children[4]. Inappropriate infant feeding practices results in feeding difficulties and malnutrition, subsequently leading to increased morbidity and mortality in them.

India is home to 40 percent of world's malnourished children. Every year, 2.5 million children die in India, accounting for one in five deaths in the world[5]. **More than half of these deaths could be prevented** by appropriate infant and young child feeding practices[6].

"Inappropriate feeding practices and their consequences are major obstacle to sustainable socioeconomic development and poverty reduction of nation. Governments will be unsuccessful in efforts to accelerate economic development in any significant long-term sense until optimal child growth and development, especially through appropriate feeding practices are ensured" [7]. This is not just a problem of the developing world, it occurs in many parts of the developed world, too.

Ideally, the infant and young child feeding comprises exclusive breastfeeding for 6 months, followed by sequential addition of semisolid and solid foods to complement and not to replace breast milk till the child is gradually able to eat normal family food. Lack of confidence, widespread ignorance and misconceptions frequently result in improper infant feeding[8].

The timely complementary feeding rate for India is only 31%. It varies from state to state, ranging from 9% in Rajasthan, 25% in Maharashtra, to 69% in Kerala[9]. In Maharashtra, more than 50% of the children after 6 to 9 months are not receiving solid foods in addition to breast milk. These patterns of feeding are not simply the result of low income, low food availability in the household or lack of time for the mother. **Inadequate knowledge** appropriate foods and feeding practices is often a grater determinant of malnutrition **than the lack of food**[9]. The low nutrient density and the poor quality of the foods, do not complement the breast feeding, and account for much of the nutritional deficiency[10].

The feeding practices that are satisfying and comfortable to both the mother and the child are crucial for the physical and emotional development of the growing child. Infant feeding should be a part of comprehensive-child care, in such a way that the child is cared for all its health needs. The **immunization clinic** of every hospital is the ideal setting, where the mother can be taught about appropriate feeding practices; and it is the **best platform available** in a tertiary care setting, for providing education and support, creating awareness, removing

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irrational beliefs and cultural taboos[11]. Nutritional counseling is effective in positive behaviour modifications and should be actively incorporated in the comprehensive child care services.

B) Importance Of Complementary Feeding For The Health Of The Child:

It is well recognied that the **period of complementary feeding,** from 6 month to 2 years of age, is one of the **most crucial times** for prevention of malnutrition in children. It is during this period, that malnutrition is responsible, directly or indirectly, for over half of all childhood deaths[12]. Growth faltering is most evident during this time period, especially during the first phase of complementary feeding (6 to 12 months) when foods of low energy density, given, begin to replace breast milk, and also, the rates of diarrheal illness due to food contamination are at their highest[13].

After two years of age, it is very difficult to reverse stunting that occured at younger age suuggesting a '**critical window**' for prevention of growth faltering[14].

Current complementary feeding practices observed **in the community** are found to be often inappropriate; exclusive breast feeding duration tends to be short and complementary feeds are insufficient in quantity, too infrequently offered and often inadequate in their nutrient density or quality to meet the requirements of all important nutrients[7].

Hence, it is essential to provide interventional strategies for improving the complementary feeding practices in the population.

To be effective, complementary feeding interventions must cover the **proximal factors**[15] that affect growth and development of the child:

* Quantity of complementary feed taken
* Quantity of complementary feed
* Continuing breast milk intake
* Associated co-morbid factors (especially due to contamination during preparation & storage of foods)

Proximal factors affecting linear growth:

Quality and quantity positively influence linear growth, but the impact of food quantity is dependent on adequate dietary quality (signified by the arrow from dietary quality intersecting with the arrow from food quantity to linear growth); morbidity negatively influences growth & quantity of feeds; but morbidity can be reduced by sustaining breast milk intake & by optimizing quality & quantity of complementary foods.

Both the quality and the quantity of complementary foods can positively influence linear growth, but simply increasing the **quantity** of food will not be effective if dietary quality is poor. Thus, dietary **quality** modifies the relationship between food quantity and linear growth. In addition, changes in **breast milk intake** may modify the relationship between food quantity and linear growth, as breast milk intake usually decreases when consumption of complementary foods increases. The other key proximal factor is **morbidity,** which has a negative effect on linear growth, as well as on intake of complementary foods. Morbidity rates can be reduced by sustaining breast milk intake and by optimizing the quality (including good hygiene during preparation, storage and feeding) and quantity of complementary foods. Thus, complementary feeding interventions should ideally address all of these proximal factors.

Problem Statement:

Under nutrition in children under 2 years of age, leads to elevated mortality risk and delayed motor development, impaired cognitive function and poor scholastic performances in them. As adults they are found to be less productive, and earn less than their healthy peers. The **cycle of under nutrition and poverty** thereby repeats itself, generation after generation. Stunting, a consequence of chronic nutritional deprivation, begins, in the period before birth, if the mother is undernourished.

Women who were stunted as girls, whose nutritional status was poor when they conceived or who didn't gain enough weight during pregnancy may deliver babies with low birth weight. These infants in turn may never recoup from their early disadvantage. Like other undernourished children, they may be susceptible to infectious disease and death, and as adults they may face a higher risk of chronic illness such as heart disease and diabetes. Thus **the health of the child** is inextricably linked to the **health of the mother** of all proven preventive health and nutrition interventions targeting children under 5 years age, improvements in infant and

young child feeding practices, has the single greatest potential impact on child survival. Therefore, reduction of child mortality can be reached only when nutrition in early childhood and IYCF specifically are highly prioritized in national policies and strategis.

Infant & young child feeding practices and growth of the child:

Optimal infant & young child feeding is essential for child growth. The period during pregnancy and a child's first two years of life are considered a "**critical window of opportunity"** for prevention of growth faltering[12]. Recent anthropometric data from developing countries confirms that the levels of under nutrition increase markedly from 3 to18-24 months of age.

Programmatic interventions to improve complementary feeding of young children:

1. Nutrition education improves care givers practices
2. Use of high quality locally - available foods improves complementary feeding
3. Use of supplements (such as vitamin-mineral powders and lipid, based nutrient supplements) improves nutrient –poor quality of complementary foods.
4. Use of fortified complementary foods.
5. Special support to food insecure populations improves diet of young children
6. Spreading awareness about common nutritive value of food items that are in use on day to day basis.
7. Special emphasis on quality and consistency of food which is used as complementary feeds by imparting functional literacy.

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Oral Genomic: The Future Dentistry

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All science is concerned with the relationship of cause and effect.

Each scientific discovery increases man's ability to predict and control future events.

-LAWRENCE J. PETER

With the beginning of 21st century we have entered in THE GENETIC AGE. It is mainly due to the HUMANE GENOME PROJECT. Scientist have mapped practically entire HUMANE GENOME[1] *in 2001.*

What Is Human Genome *?*

A genome is the entire DNA in an organism, including its genes.

It is the master blueprint for cellular structures and activities during the lifetime of each and every cell, the genome contains the complete set of instructions for the initiation, construction, operation, maintenance and repair of all living organisms .

Human Genome Sequencing - A Great Boon For Dentistry

The human genome holds an extraordinary trove of information about human development, physiology, medicine and evolution.

Genetics is playing an increasingly important role in the diagnosis, monitoring, and treatment of diseases.

This application of genetics to dental medicine, termed 'oral genomic' can aid in the molecular understanding of the genes and proteins, their interactions, pathways, and networks that are responsible for the development and progression of oro- cranio -facial diseases and disorders.

More over, these approaches provide for the development of innovative gene-based diagnostic, treatments and therapeutics, and discloses how individual genetic variance or polymorphisms are reflected in drug responses and drug metabolism .

Human Genome Knowledge Can Be Of Immense Use In Dentistry In[2] -

- Prevention of occurrence of dental caries, periodontal diseases.
- Early detection of possible occurrence of cranio-oro -facial abnormalities including malocclusion.
- Conservation, reconstruction, regeneration of orofacial structural complex.
- Building of disease resistant cranio- oro- maxillofacial complex.
- For forensic odontology purpose.

These objective can be achieved by means of[3]

- Prenatal diagnosis of rare and serious syndromes related to cranio- oro- maxillo-facial complex.
- Caries vaccine
- Stem cell research
- Tissue engineering
- Gene therapy
- DNA fingerprinting

Some Current Research Related To Oral Genomic

Prevention of occurrence of dental caries and periodontal diseases.

Dental Caries Vaccine shall be soon available. A research in this regard is going on by a group of researcher led by Martin Taubman, and Daniel Smith, sponsored by The National Institute of Dental and Craniofacial Research and National Institutes of Health USA[4].

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Restoration and reconstruction of dental tissue: Tissue engineering will have considerable effect on dental practice during next 25 years. The greatest effect will be likely to be related to the repair and replacement of mineralized tissue, the promotion of oral wound healing and the use of gene transfer adjunctively.

Growing a new tooth from stem cells : Professor Paul Sharpe at the Dental Institute, King's College London announced that they had made a breakthrough in mice, coaxing stem cells to grow into teeth within only a few weeks.[5]

The procedure entails taking stem cells the so-called master cells (that go on to become every tissue in the body) from a living being. This stem cell will be programmed and then nurtured in a laboratory until they form a ball of new cells known as a "bud". This ball of new cells then reimplanted into the patient's jaw, just under the gum at the site of the missing tooth. This new simple method will require only a local anaesthesia.

Transplantation of regenerated pulp in root canal: Tooth fillings may be on the way out. Growing new tooth tissue, using stem cells harvested from wisdom teeth, one day could repair broken or decayed teeth.

Songtau Shi at the National Institute of Dental and Craniofacial Research near Washington DC took extracted wisdom teeth, cut them open and tore the pulp away from the tooth's crown and root. He mixed the pulp with an enzyme called collagenase, which digests the matrix of connective tissue that holds the pulp together. This left a mixture of pulp cells, which Shi filtered to isolate dental pulp stem cells. He then cultured these cells in a nutrient-rich liquid.[6]

Next, Shi tested whether dental pulp stem cells would generate new tooth tissue. He mixed batches of cells with a ceramic powder containing hydroxyapatite, the mineral found in bone, and implanted the mixture under the skin of mice.

After two months, Shi examined the transplants. The cells had produced dentine and also a pulp-like tissue.

Transplantation of mandible in a mandibuloctomy patient :

Dr. Patrick Warnke, a German reconstructive facial surgeon at the University of Kiel in Germany used a mesh cage, a growth chemical and the patient's own bone marrow, containing stem cells, to create a new jaw bone that fit exactly into the gap left by the cancer surgery.[7]

Gene therapy in Dentistry :

The potential for using genes themselves to treat disease, known as 'gene therapy' is the most exciting application of DNA science. This rapidly developing field holds great potential for treating or even curing genetic and acquired diseases, using normal genes to replace or supplement a defective gene or to bolster immunity to disease.

Dental DNA for Genetic Fingerprinting :

Genetic typing of DNA extracted from pulp of the tooth may provide excellent opportunity for DNA finger printing than any other body tissue due to the well-protected position of the dental pulp .

Analysis of DNA found in saliva left on human skin or on evidentiary material such as postage stamps or envelope flaps has proven useful to forensic scientists in the identification of criminals.

FUTURE PROSPECTS OF ORAL GENOMICS

Building Disease - resistant Dental Structure :

Armed with genetic knowledge, researchers should be able to instruct dental embryonic tissue to build disease - resistant tissues.

Conclusion

Within the next few decades, changes in the methods and materials used to treat dental disease will take place. Treating dentist will be able to apply genetic engineering techniques to stimulate the body repair itself, rather than placing extrinsic materials.

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ORIGINAL ARTICLE

Management Of Pseudocyst Of Pancreas

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ABSTRACT

Background: This review analyses the outcome of pancreatic pseudocysts managed in Sassoon General Hospitals Pune a referral center.

Objective : 1.To study the different modalities of management 2.Set out indication for conservative management & drainage intervention 3. To study outcome of different modalities.

Patients and Methods: From 2012 to 2014, 30 patients were treated for pseudocysts. Out of 30 patients, 14 underwent conservative management, procedures were performed included cystogastrostomy (n-10,33.3%), cystoduodenostomy (n-1,3.3%), cystojejunostomy (n-2,6.7%), and endoscopic drainage (n-3, 10%).

Results: All patients had regression of pseudocyst and no patient developed recurrence. There were no deaths in this series. There were 0% incidence of major complications and a 10% incidence of minor complications. Outcome was excellent.

Conclusions: Management plans should based on cyst size, wall thickness & duration. Newer techniques have a definite role and, therefore, recommend a multi disciplinary approach for the management of pseudocyst of pancreas in a specialist center.

Introduction

Pancreatic pseudocyst is a localised collection of pancreatic exudate, enclosed by non epithelialised wall, which arises as a result of acute pancreatitis, chronic pancreatitis or pancreatic trauma.[1] Approximately 75% of all the cystic lesions of pancreas are pseudocysts.[2] For over three-quarters of a century, pancreatic pseudocysts have been drained surgically and more recently by other techniques because of the perceived risks of complications including infection, obstruction, rupture or haemorrhage[3,4]. The natural history of pancreatic pseudocysts documented by ultrasound scan in the1980s reported serious complications in 30-50% of un-operated pseudocysts[5]. Drainage of pancreatic pseudocysts persisting over 6 weeks was recommended, as this allowed time to document lack of resolution and would also lead to maturation of the cyst wall[6,7,8]. The therapeutic approach to pancreatic pseudocyst cysts has evolved over the past thirty years. What once was treated with a surgical or percutaneous approach is now being managed via endoscopy.

Materials and Methods

Between 2012-2014, 30 patients whose ultrasonography (USG) of abdomen suggestive of pseudocyst of pancreas (26 males, 4 females) were treated. Most of the cases were from age group 31-40 years (26.7 %). Most of these patients were managed by supportive care (n-14, 46.7%). The principal drainage procedure undertaken was a Cystgastrostomy (CG) which was performed in patients (n-10, 33.3%). Other internal drainage procedures included cystduodenostomy (CD) (n-1, 3.3%) and cystojejunostomy (CJ) (2, 6.7%). Some of the patients were managed by endoscopic drainage (3, 10%).

Investigations:

Transabdominal Ultrasound (USG):

Pseudocysts appear more complex, with varying degrees of internal echoes of necrotic debris.

Computerised Tomography (CT):

The CT scan provides a very good appreciation of the wall thickness of the pseudocyst, which is useful in planning therapy.

Magnetic Resonance Imaging (MRI):

They are generally not routinely used.

Discussion & Results

The incidence of pseudocyst is low ranging from 1.6 to 4.5% or 0.5 to 1 per 100000 adults per year[9,10]. There are

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various modalities including conservative, surgical, percutaneous and endoscopic drainage. As none of these patients fit into category of percutaneous drainage we have focused here on conservative management, surgical & endoscopic drainage.

Conservative management: The study was conducted in our institute between 2012 to 2014. We selected cases according to the inclusion and exclusion criteria mentioned above. Out of 30 patients 14 had undergone for supportive management.

- **Indication** for conservative management are: thin walled (<4mms wall thickness), immature non-expanding cyst and absence of complication. **In our study there is no morbidity or mortality.**

Conservative treatment

Successful conservative treatment	n	Cyst size (median)	Complication	Required surgical intervention	CR	FU (mean)
Our study	30	4.9 cm	NR	NR	100 %	30 Months
CVN Cheruvu et al[11]	36	7 cm	NR	2.8%	NR	37.5 months
Vitas et 9l & Yeo et al[12]	68	4.9	9%	28 %	57 %	46 months

TABLE 1 (n-sample size, NR- Not Recorded, CR-Complete Resolution, FU –Follow Up)

Medical management consist of intravenous fluids, analgesics, and antiemetics. Low-fat diet is given to patients who tolerate. In patients with low or poor oral intake, support can be provided via nasoenteral feeding or total parenteral nutrition (TPN). The role of octreotide is still dubious, rationale of using octreotide as a therapy for pancreatic pseudocyst is that it will decrease pancreatic secretions and aid in pseudocyst resolution. Most pseudocysts resolve with supportive medical care.

Surgical drainage :

In general, the operative management of pancreatic pseudocyst aims to evacuate the pseudocyst contents and prevent complications.

- **Indications** for drainage are as follows (in general)[8].

1. Presence of symptoms.
2. Enlarging cyst despite of conservative treatment.
3. Presence of complications (infection, hemorrhage, rupture, and obstruction etc.)

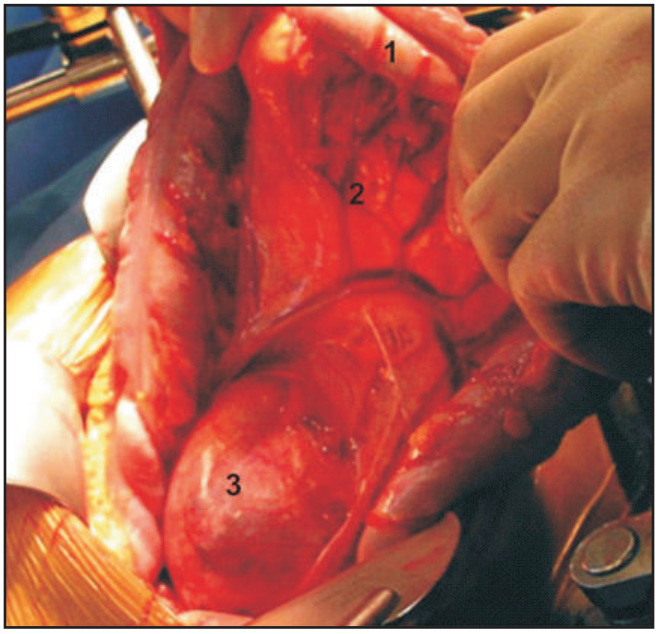

Fig 1 Visualization Of Pseudocyst Of Pancreas

1 - transverse colon

2 - transverse mesocolon

3 - pseudocyst of pancreas.

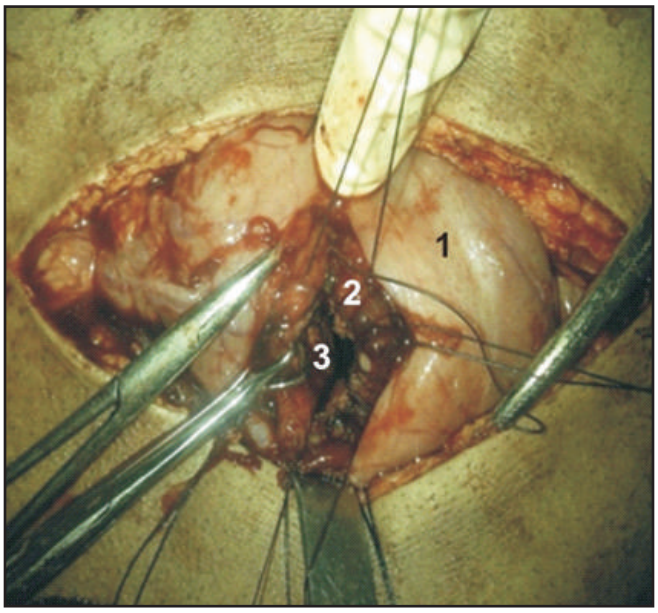

Fig 2 Management By Cysto-gastrostomy

1 - stomach

2 - cystogastro anastomosis

3 - cystic cavity

- **Cystogastrostomy(CG):**
  - **Indications** for cystogastrostomy drainage procedure are: mature thick walled (> 4mm wall thickness) symptomatic pseudocysts with close apposition to gastric wall, located in the body of pancreas having large amount of debris within the cyst.
  - Postoperative hemorrhage reduced by oversewn cystogastric anastomosis with interrupted suture.
- **Cystojejunostomy(CJ)**
  - **Indications** for cystojejunostomy drainage procedure are: mature thick walled (>4mm wall thickness) symptomatic pseudocysts without close apposition to intestinal wall, located in body and or tail region of pancreas having large amount of debris within the cyst.
- **Cystoduodenostomy(CD)**:
  - **Indication** for cystoduodenostomy drainage are: mature thick walled (>4mm wall thickness) symptomatic pseudocyst in head region with intervening space between cyst & dudenal wall < 1cm with presence solid debris in cyst.

Surgical Drainage

Study name	n	CG	CD	CJ	Complications		Cyst recurrence	Mortality
					Major	Minor		
Our study	30	14(47%)	1(3%)	2(7%)	NR	NR	NR	NR
RW Parks et al[15]	33	21(64%)	2(6%)	1(3%)	3(9%)	7(21%)	NR	NR
Dr. Wen-Yao Yin et al[16]	22	8(36%)	NR	4(18%)	3(13%)	NR	CJ 1(4.5%) CG1(4.5%)	NR
Meta-analysis by Becker WF et al[25]	13	2(15%)	NR	6(46%)	4(30%)	NR	CG (10%)	NR
Charles F.Frey M.D.etal[14]	131	24(18.3%)	5(3.8%)	13(10%)	NR	CG5(4.%) CJ10(7.2)	CG49(37.5%) CD26(20%) CJ30(23%)	CG5(4.2%) CD52(40%)
Mitty & colleague[17]	855	415(48.5%)	75(8.7%)	365(42.6%)	NR	NR	CG25(3%) CD68(8%) CJ51(6%)	NR

Table 2 (n-Sample Size, CJ: Cystojejunostomy, CD: Cystoduodenostomy)

Major complications which resulted in prolonged hospital stay include wound dehiscence, chest infection and delayed gastric emptying. Minor complications included atelectasis, minor wound infection and central line sepsis. **In our study there is no major & minor postoperative complications seen**. We feel that surgical internal drainage represents a very satisfactory treatment option against which less invasive techniques should be judged.

- **Endoscopic drainage:**

  Indications for endoscopic drainage are: mature thick walled (4mm - 1cm) cyst with close apposition to gastrointestinal wall with absence of debris within the cyst (as radiological catheters are prone to clog with pancreatic debris, which may result in failure of drainage and secondary infection.)

Endoscopically, the pseudocyst can be drained either by transpapillary or cyst-enterostomy, or both. Transpapillary drainage is the treatment of choice in a communicating pseudocyst smaller than 6 cm and remotes from gastric and duodenal wall[18]. Transmural drainage of pancreatic pseudocyst is accomplished by placing one or more large-bore stents through the gastric or duodenal wall. Due to the fact that endoscopic ultrasonography (EUS) was not available at our institution, conventional endoscopic transmural drainage followed by insertion of a single 7 Fr double pig tail biliary stent was performed. The Endoscopic drainage was not applied if such definite bulging was not identified by endoscopy. Since we are using the conventional technique (transmural non EUS guided) for endoscopic management, we are going to compare our study only with those of other experts who have also used this particular technique. Technical success rate in our study is100% (n-3)

Endoscopic Drainage

AUTHORS	NUMBER OF CASES (n)	COMPLICATIONS n (%)	TECHICAL SUCCESS n (%)
OUR STUDY	30	0	30(100%)
BARON et al[19] (2002)	138	33 (24%)	NR
SMITS et al[20] (1995)	37	06 (16%)	34 (92%)
BINMOELLER et al[21] (1995)	24	03 (12.5%)	20 (83%)
SHARMA et al[22](2002)	33	05 (15%)	33 (100%)
BECKINGHAM et al[23](1999)	34	NR	24 (71%)

Table:3 (n- Sample size, NR- Not Recorded)

- Average time required for technically successful transmural drainage of pseudocyst in our study was approximately 79 minutes. Not many other studies have reported this part of study.
- Average hospital stay in our study was 3 days which is comparable to other studies.
- Cases were followed after 2 and 6 weeks from the procedure. Median follow up time was 4 weeks. On follow up, cases were evaluated clinically, radiologically and upper GIT endoscopy was

performed routinely. Endoscopic drainage has no complication (0%) and very low recurrence rates (0%) with a high clinical success rate (100%).

- Clinical success rate was 100%. Cyst infection which are evident clinically (fever, tachycardia) and on haematological studies (raised white blood cell counts) were not seen.
- Stent migration was not seen in follow up.

Conclusion

- When pseudocysts occur due to acute pancreatitis it should be observed for approximately 6 weeks from the onset of symptoms to allow maturation of the cyst wall or spontaneous regression; waiting a further 6 weeks is unnecessary, expensive, and perhaps may be hazardous.
- The old teaching that the presence of cysts of more than 6 cm in diameter for more than 6 weeks should be drained is no longer true.
- In general, however, management plans should be based on cyst size, wall thickness & duration. It should be applied to cysts irrespective of patient aetiology.
- **Conservative management:** In making treatment decisions, it is important to remember that most of pancreatic pseudocysts do not require any intervention and can be successfully managed by conservative management. Patient selection is the key for successful management. Better results are achieved by meticulous patient selection.
- **Surgical intervention:** In general, the operative management of pancreatic pseudocyst aims to evacuate the pseudocyst contents and prevent recurrence. If the pseudocyst cavity is decompressed, it is likely to become obliterated with the passage of time. Cystogastrostomy and Cystojejunostomy are operations of choice according to the particular anatomy and condition of the patient. Immature cyst are not capable of holding sutures, so thickness of cyst wall is an atmost important parameter for management
  - **Cystogastrostomy (CG):** Cystogastrostomy is a simple approach whenever the pseudocyst is in posterior gastric wall. Postoperative hemorrhage can be reduced by oversewn cystogastric anastomosis with interrupted suture.
  - **Cystojejunostomy (CJ):** Suitable for pseudocysts without close apposition to intestinal wall, located in body and or tail region of pancreas.
  - **Cystoduodenostomy (CD)**: For pseudocyst in head region with intervening space between cyst & dudenal wall < 1cm with presence solid debris in cyst.

The risk of recurrence is reduced by ensuring that a pseudocyst is completely decompressed and by fashioning a wide opening at least equal to the intestinal lumen i.e at least 3 cm cyst-bowel anastomosis which will ensure adequate drainage.

Endoscopic drainage :

- Double pigtail endoprosthesis should be used to avoid pressure necrosis of the cyst wall.
- Importantly, indwelling of large endoprostheses for at least 6 weeks is advisable.
- Though endoscopic drainage is a minimally invasive procedure it is being done in well equipped hospitals & available surgeons' expertise.

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ORIGINAL ARTICLE

Study Of Lymphadenopathy in PLHIV

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ABSTRACT

Introduction - Lymphadenopathy is the most consistent sign throughout the clinical course of HIV infection. FNAC and lymph node biopsy, can effectively diagnose the cause of lymphadenopathy in HIV-positive patients and will help to institute effective therapy in addition to HIV itself. There are many other causes of lymphadenopathy in these patients making treatment challenging. Thus, Proper evaluation for diagnosis before starting treatment is crucial.

Aims And Objectives - 1. To study various presentations of lymphadenopathy in PLHIV 2. To study underlying etiology of lymphadenopathy by investigations. 3. To study correlation between lymphadenopathy and CD4.

Materials And Methods - 50 patients with proven HIV infection admitted to a medical ward, of a tertiary care center were studied. All baseline investigations were done (e.g. Hemoglobin, ESR, Peripheral Blood smear etc) All patients were subjected to a X-Ray chest P A view. Ultrasound scan of the abdomen was performed to document the size of the liver and spleen and to ascertain the presence of abdominal or retroperitoneal lymph node enlargement. CSF examination and CT scan brain were done when clinically indicated suggesting CNS involvement. CD 4 /CD 8 counts were studied. Open superficial cervical lymph node biopsies were performed. CT guided biopsy was done on three patients. There were no complications of lymph node biopsy and all were given antibiotic and analgesics after the procedure.

Results - There were 60% males and 40% females with Male to Female ratio 3: 2. The highest number of cases were in the age group of 21-30 years followed by 31-40 years age group. The commonest site of lymph node biopsy was cervical lymph node followed by the cervical, inguinal, axillary and abdominal group of lymph nodes. 48 cases (96%) revealed infective pathology. Tuberculosis was the commonest opportunistic infection encountered in 42 cases (84%), followed by PGL (6 cases - 12%) and Hodgkin's disease (2 cases - 2%) We got 3 cases of single cervical lymph node and all were TB.

Conclusion - The most common cause of lymphadenopathy in PLHIV is Tuberculosis. Patients may be directly started on Anti tubercular treatment but because of the growing problem of resistance to AKT and the emergence of MDR and XDR it is now important to confirm the diagnosis by biopsy before starting AKT. There could be other opportunistic infections responsible for the lymph node enlargement and hence lymph node biopsy is further indicated.

Introduction

Lymphadenopathy remains the most consistent sign throughout the clinical course of HIV infection[1]. Differential Diagnosis of Lymphadenopathy In HIV Patients:[1,2] are Infectious Causes causing Generalized lymphadenopathy ie HIV infection (including PGL), Mononucleosis; EpsteinBarr virus, *Mycobacterium* avium complex, TB, Cytomegalovirus, Secondary syphilis, Toxoplasmosis, Histoplasmosis, other fungal diseases, Bartonella infection, Hepatitis B, Lymedisease, Chlamydia (lymphogranulomavenereum), Widespread skin infections, Immune reconstitution syndrome and Follicular hyperplasia. Any of the above, can also cause localized lymphadenopathy. Other causes of localized adenopathy are Oro pharyngeal and dental infections, Cellulitis or abscesses, Chancroid, TB (scrofula), Neoplastic Causes like Lymphoma, Acute and chronic lymphocytic leukemias, Other malignancies; metastatic cancer, and Kaposi sarcoma. Other uncommon causes are Reactive process (benign Sarcoidosis, Hypersensitivity reaction to medications, Serum sickness, Rheumatoid arthritis, Castleman disease etc. Hence it is prudent to do lymphnode biopsy for histopathological diagnosis in these patients.

Aims And Objectives

1.To study various presentations of lymphadenopathy in PLHIV 2. To study underlying etiology of lymphadenopathy by investigations. 3. To study correlation between lymphadenopathy and CD4.

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Materials and Methods

A prospective study of lymph node biopsies with their clinical correlation was carried out in our hospital. **Patients:** 50 patients with proven Human Immunodeficiency virus (HIV) infection admitted to a medical ward, were studied. HIV infection was considered confirmed, if the patient was reactive by two different ELISA methods.

Data Collection

Using a standardized data extraction proforma, detailed history and epidemiological data was noted. A thorough clinical examination was done and the findings noted included oral candida, hairy leukoplakia, previous marks of HZ, details of lymphadenopathy and involvement of other systems. All baseline investigations were done (e.g. Hemoglobin, ESR, Peripheral Blood smear etc)

All patients were subjected to a X-Ray chest P A view. Ultrasound scan of the abdomen was performed to document the size of the liver and spleen and to ascertain the presence of abdominal or retroperitoneal lymph node enlargement. CSF examination and CT scan brain were done when clinically indicated suggesting CNS involvement. CD 4 /CD 8 counts were carried out on blood samples collected in EDTA bulbs, using Beckston Diekinson flow cytometer in Microbiology Department. Open superficial cervical lymph node biopsies were performed under local anesthesia in the minor operation theatre by surgery residents using all biosafety precautions. CT guided biopsy was done on three patients from abdominal lymphadenopathy and all had TB. Specimens of lymph node biopsy were sent to surgical pathology section for histopathological examination in 10 % formaline fixative. Sections from lymph node tissue including part of capsule were processed by routinely accepted manual methods of tissue processing.

Observations

Table No.1 Age And Sex Wise Distribution Of HIV / AIDS Cases

Age group (yrs)	Male (30%)	Female (20%)	Total
10 – 20	2 (50%)	2 (50%)	4
21 - 30	7 (35%)	13 (65%)	20
31-40	16 (88.89%)	2 (11.11%)	18
41-50	3 (60%)	2 (40%)	5
51-60	2 (66.67%)	1 (33.33%)	3

Most patients belong to age group 21-40 yrs with a male predominance. The male to female ratio was 3:2 The youngest subject was 14 year old and the oldest was 55 years old.

Table No.2 Risk Factors In HIV / AIDS Cases

Risk Factors	Males	Females	Total
Heterosexual	24(48%)	16(32%)	40(80%)
Blood or Blood Products	0	1(2%)	1(2%)
Not Documented	6(12%)	3(6%)	9(18%)

The heterosexual activity was responsible for the large majority of HIV infection in the world today especially in the developing world. (88,67%)

Table No. 3 Classification Of Pathological Lesions Of Lymph Node In HIV/AIDS Cases (According To Histology)

Pathological lesion	Number of cases	%
TB	42	84
PGL	6	12
NEOPLASTICHODGKIN'S DISEASE (MIXED CELLULARITY AND NODULAR SCLEROSIS)	2	4

Tuberculous lymphadenitis constituted the commonest cause of lymph node enlargement, comprising 42 cases (i.e. 84 %) followed PGL comprising 6 cases (12%) and Hodgkin's Disease (4%)

Table No. 4 Distribution Of Lymph Node Group Affected

Group of Lymph nodes	Total Cases
Only Cervical	7
Cervical + Inguinal	5
Cervical + Axillary	4
Cervical+ Abdominal + Inguinal	3
Cervical+Hilar	1
Only Abdominal	3

Cervical lymph nodes were the most commonly involved

Table No. 5 Disease And Its Relation To Cd4 Count

Disease/CD4 count		<100 (100 incl.)	101-200 (200 incl.)	201-500
TB (42)		13	15	14
PGL (6)		0	0	6
HODGKINS MIXED CELLULARITY	(1)	0	0	1
HODGKINS NODULAR SCLEROSIS	(1)	1	0	0

CD4 count was 102 to500 in 29 cases of TB and all PGL had CD4 count of 201 to 500

Discussion

Lymph node is frequently involved in HIV/AIDS because it is the backbone of immune system. The clinician readily turns for help to a lymph node biopsy when confronted by an obscure clinical problem because lymphadenopathy is a common primary presentation sign. In man, thousands of lymph nodes are present throughout the body. Since their prime function is to deal with antigens, lymph node enlargement is very common and prone to enlarge in disturbance of immunity. Lymph node are also involved frequently in regional or systemic diseases. The interpretation of lymph node biopsy report with its correlation with clinical presentation is more important than the report alone.

Hence this present study was undertaken to elucidate the pattern, clinical presentation and incidence of various lymph node lesions in Indian population.

***AGE*- (Table1)** Our study also had maximum number of patients from the age group 21- 30 (20 cases) and 31- 40 (18 cases) total of 38 cases.-(76%). Study of HIV associated lymphadenopathy and Tuberculous Lymphadenitis in patients undergoing lymph node biopsy in Zambia by Bem C et al [3] showed maximum number of patients in the age group 17 - 44 years. (76%). **SEX**-Males (60%) outnumbered females (40%). This seems to be due to high-risk behavior and sexual promiscuity associated with this age group, which is the most sexually active group of the population. Thus it was found that economically producing group of the population was affected resulting in serious repercussions on economic and social status of the country. **(Table No.2)**. Extra marital, heterosexual contact was observed as the commonest risk factor of which commercial sex worker exposure formed the largest group. In most of the females (16 out of 20) there was history of HIV infection in husband. 3 did not know their husband's status and one was a known case of thalassemia with history of multiple blood transfusion since 10 years and her father and mother were HIV negative. 6 male patients denied any high risk behavior and hence were categorized in the unknown (not documented) category. The heterosexual activity is responsible for the large majority of HIV infection in the world today especially in the developing world. [4,5]

Tuberculous lymphadenitis constituted the commonest cause of lymph node enlargement, comprising 42 cases (i.e. 84%) followed by PGL comprising 6 cases (12%) and Hodgkin's Disease (4%). **(Table 4)** All patients with PGL showed type-I pattern on histopathology. These cases showed large Bizarre germinal center with numerous and prominent tangible body, macrophages and paracortical B cell hyperplasia.

The incidence of Tuberculosis and HIV associated neoplasms in the present study is comparable with that of study by Bem C in Zambia[3] and Ellison[4] The high incidence of tuberculosis in the present study as compared to studies by Wong[6], Dominguez[7] and Eugene Albu[8]could be a reflection of higher incidence of tuberculosis because of endemicity of tuberculosis in our country. In HIV/AIDS patient probably there is reactivation of the previously contained focus of tuberculosis due to immunodeficiency. Multidrug resistant strains of TB bacilli have been reported from India, which probably aggravated the problem further. The lower incidence of reactive hyperplasia in our study could be due to lack of constitutional symptoms associated with PGL so the patients present in advanced stage when the constitutional symptoms appear due to invasion of lymph node by the secondary infections or malignancies. The incidence of lymphomas in HIV positive patients with lymphadenopathy in our study is comparable with the studies by Ellison[9] Dominguez[7] Eugene Albu[8].

(**Table 4**) Cervical group of lymph node was the commonest site for affection by disease. 18 patients of TB lymphadenitis had both cervical and axillary involvement. 23 patients of TB lymphadenitis had involvement of cervical and inguinal lymph node simultaneously. 13 patients of TB had all groups of lymph node involved. One patient of Hodgkin's Disease had involvement of cervical, axillary, inguinal and

abdominal lymph node. Other patient had only cervical and abdominal lymph node involvement. Out of the 6 patients of PGL four had cervical, axillary and inguinal lymph node involved and two of them had cervical and axillary group involved. In this study only incidence of various lymph node group involvement was noted. There was no clinicopathological correlation. In our study cervical group of lymph node was the commonest site of affection followed by inguinal and then axillary. The difference could be because of high prevalence of tuberculosis in India which has got more preledictionfor lymph nodes in head neck regions

Clinical Features

Fever was the commonest complaint (47 patients) followed by anorexia (42 cases) and weight loss (41 cases). 32 patients had cough. Only 12 patients presented with the complaint of neck swelling. Out of 42 patients of TB lymphadenitis 28 patients had low grade fever with evening rise of duration more than one-month and 8 patients had cough more than one month. 37 patients had anorexia and 35 had weight loss. Only 9 patients had a complaint of neck swelling. 4 patients had CNS involvement in the form of: 1 had AIDS dementia complex, 2 had TBM and 1 had GTC. 23 patients had chronic diarrhea of duration more than 1 month. All 6 patients with PGL had fever of more than 1 month and 2 patients had cough more than 1 month duration associated with weight loss, anorexia, and loose motion. Both the cases of Hodgkin's disease had fever more than 1 month and neck swelling and hepatomegaly with abdominal lymphadenopathy. The one patient with Hodgkin's disease nodular sclerosis had weight loss, anorexia , loose motions ,cervical, axillary, inguinal and abdominal lymphadenopathy with hepatosplenolmegaly The other case of Hodgkin's disease had cervical and abdominal lymphadenopathy with hepatomegaly. Out of 14 patients who had respiratory system involvement, 6 patients had miliary tuberculosis and all of them had caseating TB Lymphadenitis. One patient had pericardial effusion and was tubercular. Sputum AFB was positive in only three cases and all of them had bilateral extensive pulmonary infiltrates. In 19 patients respiratory system was involved either in the form of infiltrates or pleural effusion. Most of the X-ray findings in our study were comparable with the study by GnanaSunderam[5]except pericardial effusion. The incidence of pericardial effusion was comparable with study by C. Deivanayagam[10] No study is available mentioning detailed characteristics of lymph node in HIV positive patients

In 4 patients with TB lymphadenitis, CNS was involved. 1 had AIDS dementia complex, 2 had TBM ,1 had GTC. One patient with TB lymphadenitis had tubercular pericardial effusion. 37 patients had GIT involvement in the form of loose motions or hepatosplenomegaly or abdominal lymphadenopathy. In one case TB involved-Pericardium, Abdomen and Respiratory System simultaneously. In three cases of TB Lymphadenitis sputum AFB was positive. All had bilateral pulmonary infiltrates. The incidence of fever in our study was comparable with Szu-min Hsieh study[15]. The higher incidence of weight loss in the present study could be because of poor socioeconomic conditions leading to malnutrition and also because of higher incidence of chronic diarrhea due to poor hygiene in our country. In our study there was higher incidence of hepatosplenomegaly. This could be because have more advanced HIV disease causing proliferation of reticuloendothelial system or may be due to endemic infections causing hepatosplenomegaly like malaria or enteric fever.

Tuberculosis

In our study 42(84%) of TB cases had lymphadenopathy. S. Rajsekaran et al reported 30.6% incidence of Lymphadenopathy in patients of tuberculosis with associated HIV infection.[10]Mainly cervical group of lymph node were involved but the definite figures involving group of lymph nodes were not given. In disseminated tuberculosis which is common in advanced HIV infection, there is generalised lymphadenopathy. Single cervical lymph node was found in 3 cases. There was no sinus formation in any case. Two patients had firm submandibular lymph node suggesting possibility of malignancy. But biopsy of the same turned out to be tubercular. In our study 26 patients had matted lymph nodes indicating periadenitis and more advanced extrapulmonary TB. Non-matted lymph nodes indicate early tubercular disease [11]Usually multiple lymph nodes are involved in disseminated TB.

13 patients of TB had CD-4 count <100 cells/MicroL and 15 patients had CD4 count in the range of 100-200

cells/MicroL. M. Tuberculosis being more evident organism can cause disease at any stage of HIV infection. Thus in total 28 patients out 42 had CD 4 count < 200 cells/MicroL(**Table 5).** Thus it was appropriate to include extrapulmonary TB as an AIDS defining condition in CDC criteria especially in developing countries like us.

HIV infection increases the risk of developing active tuberculosis by a factor of 15 to 30 and tuberculosis itself increases the replication of HIV leading to high viraemia. Thus more the advanced tuberculosis more immunosuppression and less the CD-4 count [12]TB can occur in early stage of HIV infection and may be the early sign of HIV disease. 14 patients TB Lymphadenitis in our study had CD4 count> 200/MicroL. We could not find M.Avium complex. This may be because of less work up for the same and M. TB itself decreases the incidence of MAC infection.

Hodgkin's Disease

We found 2 Cases of HD in our study. The patient of H.D. with mixed cellularity, had only mild hepatomegaly with cervical matted, rubbery and non tender lymph nodes. The other patient of H.D. with nodular sclerosis had moderate hepatosplenomegaly with generalised abdominal lymphadenopathy. Both of them had no mediastinal lymphadenopathy on chest X-Ray. There is 120-fold increase, in incidence of lymphomas in HIV infection as compared to the general population[12] NHL is the commonest lymphoma and has got more extranodal involvement, which is the AIDS defining condition in HIV disease. Most of the literature mentions about the increased incidence of NHL but there is no definite figures regarding the Hodgkin's disease. Few studies from India are available for comparison. K.N. Naresh et al at Tata Memorial Hospital found 4 cases of H.D. out of 26 cases of lymphoma[13] They were in the advanced stage as mentioned in the literature [16].

We had 6 cases of PGL (12%). All six patients of PGL had bilateral multiple non-matted non-tender and firm lymph node of size 1.0 to 2.0 cm. Two patient had hilar lymphadenopathy on Chest X ray. One patient had splenomegaly. This incidence is very less as compared to studies in Western countries Bem C et al (25.09%)[3], Dominguez et al (50%)[7] Wong (50%)[6] and Eugene (22 %)[8]. This can be due to asymptomatic lymphadenopathy of PGL and less awareness about the lymphadenopathy in our country. Also patients present to us only when they get constitutional symptoms when the lymph node is involved in the opportunistic infection. (TB being the most common) Only one patient presented with the complaint of neck swelling. All 6 patients with PGL had fever. Two patient had low-grade fever cough> 1 month and weight loss anorexia and LM. This can be because of recurrent diarrhoea due to opportunistic infection or can be because of sub clinical TB infection, which we could not detect on routine X-ray and laboratory investigations. All 6 patients had bilateral symmetrical cervical lymphadenopathy which was non matted, non tender, firm and of size 1.0 -2.0 cm. This is comparable with the study by Richard A Kaslow et al[14]. Lymph node Group involved - Cervical group was the most common followed by axillary and inguinal. Our study cannot be compared to other studies because of very small number of patients of PGL. All 6 patients had CD 4 count > 200/MicroL indicating fair immunity which was comparable to the most of studies of PGL. All 6 had type I PGL on histology which also correlates with the CD-4 levels. One patient had mild splenomegaly which can be because of other viral infections leading to reticuloendothelial hyperplasia.

Conclusion

Tuberculosis is the commonest cause of lymphadenopathy in PLHIV. Though it is possible to make a diagnosis by correlating clinical features and characteristics of lymphadenopathy and supportive investigations, biopsy is the gold standard for final clinicopathological diagnosis In a resource limited country like ours where invasive biopsy may be difficult, patient may be directly started on Anti tubercular treatment but because of the growing problem of resistance to AKT and the emergence of MDR and XDR it is now important to confirm the diagnosis by biopsy before starting AKT. There could be other opportunistic infections responsible for the lymph node enlargement and hence lymph node biopsy is further indicated.

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ORIGINAL ARTICLE

Knowledge And Practice Regarding Animal Bite Case Management Among Government Medical Officers Of Maharashtra

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ABSTRACT

Introduction: Rabies is a 100% fatal disease but preventable with timely management of animal bite exposure. Government Medical officers constitute important source of first level of contact for the animal bite case management for the victims of animal bites in a community.

Objectives: To assess the knowledge and practice regarding animal bite case management among government medical officers of Maharashtra.

Material and Methods: This is a descriptive study done for a period of three months from June 2013 to August 2013 among the 120 medical officers working in the primary health centres, rural hospitals, municipal corporation hospitals and dispensaries. Medical officers were interviewed using structured, pretested questionnaire regarding their knowledge and practice of animal bite case management. Statistical analysis was done by using proportion and percentage.

Results: 111(92%) out of 120 Government Medical Officers knew about WHO classification of animal bite wounds. 80% Medical Officers had knowledge regarding washing of wound with soap and water and practiced it. 94% Medical Officers had knowledge regarding application of local virucidal agents and practicing it. 89% Medical officers had knowledge regarding not to apply bandage to the wound. 87% Medical Officers had knowledge regarding not to suture the wound and practiced it. 89% of Government Medical Officers knew that modern tissue culture vaccine for prevention of rabies should not be given in the Gluteal region. 77% of Government Medical Officers knew that modern tissue culture vaccine for prevention of rabies can be given to pregnant women. 85(71%) Medical Officers knew about the correct route, site and schedule of Anti Rabies Vaccines. Out of 85, only 27 (32%) medical officers knew about intra dermal Vaccination schedule and practiced it and 58 (68%) medical officers had knowledge regarding intra muscular regimen and are practiced it. 104 (87%) Government Medical Officers had the knowledge about any type of Rabies Immunoglobulin (RIG) out of which 65 (63%) knew about Equine RIG and only 39 (37%) knew about human RIG. Only 22 (23%) out of 94 Medical Officers could tell about the correct dose of Human RIG and 38 (40 %) about the Equine RIG.

Introduction

Rabies is a fatal Zoonotic disease caused by RNA viruses of the Family Rhabdoviridae, Genus Lasavirus. Virus is typically present in the saliva of clinically ill mammals and is transmitted through a bite[1]. Human mortality from endemic canine rabies was estimated to be 55000 deaths per year with 56% of the deaths estimated to occur in Asia and 44% in Africa. The majority (84%) of the deaths are occurring in rural areas. Deaths caused by rabies are responsible for 1.74 million DALY lost each year[2].

In India an estimated 20,000 human rabies deaths occur annually which constitutes 36% rabies deaths in the world. 17.4 million animal bite cases occur annually in India. The animal bite incidence rate is 1.74% [3].

Rabies is fatal but preventable disease by using correct methods of wound management including washing the wound and post- exposure prophylaxis. After animal bite, post exposure prophylaxis is the only way to prevent rabies[4]. Some studies have shown that knowledge regarding animal bite prophylaxis is lacking to some extent among the medical professional[5].

Government Medical officers constitute an important source of first level of contact for the animal bite case management for the victims of animal bites in a community. The present study will throw light on the current practice of animal bite prophylaxis among Government medical officers.

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Objective

To assess the knowledge and practice regarding animal bite case management among government medical officers.

Materials and methods

This is a cross-sectional study done among the 120 Government Medical Officers working in primary health centres, rural hospitals, municipal corporation hospitals and dispensaries of Thane district of Maharashtra. Of 120 medical officers, 72 were working at primary health centres and rural hospitals while 48 medical officers were working in Thane and Kalyan municipal corporation hospitals and dispensaries. This study was done for a period of three months from June 2013 to August 2013. Medical officers were interviewed using structured, pretested questionnaire regarding their knowledge and practice of animal bite case management. Statistical analysis was done by using proportion and percentage.

Results & Discussion

111(92%) of Government Medical Officers knew WHO classification of animal bite wounds. In a study conducted by Subhas Babu P et al 67.3% of the Medical officers knew the correct WHO classification of animal bites.[6]

Knowledge and practice regarding first-aid in animal bite case management was assessed. 107 (89%) Medical Officers had knowledge regarding washing of wound with soap and water and practiced it. 113 (94%) Medical Officers had knowledge regarding application of local virucidal agents like 70% alcohol or providon iodine and practiced it. 107 (89%) Medical officers had knowledge regarding non application of bandage to the wound. 104 (87%) Medical Officers had knowledge regarding not to suture the wound and practiced it.

Table1: Knowledge and practice regarding the first-aid in animal bite case management among Govt. Medical Officers

Advice on First Aid	No (%)
Washing of wound	107 (89)
Apply virucidal	113 (94)
Not to apply Bandage to wound	107 (89)
Not to suture wound	104 (87)

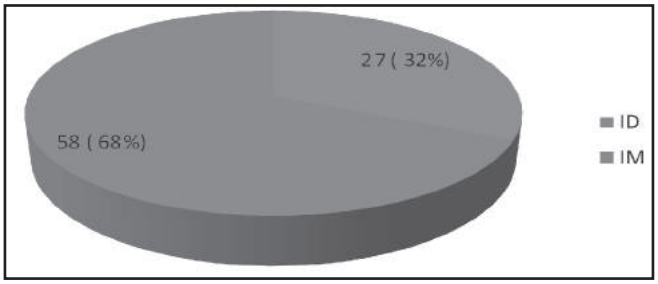
The study by S. Bhalla et al had shown that only 66% of the general practitioners practised cleaning of wound as first-aid measure and 50% dressed wound.[5] In a study conducted by Subhas Babu P et al, 87.4% of the Medical officers had facilities for wound wash at their health centres.[6] In a study conducted by Aurobindo Samantaray et all among AYUSH doctors, 55.2% had correct knowledge about the first aid treatment of animal bite cases.[7]

Majority of the Government Medical Officers knew about the different types of vaccines available (62% - Rabipur, 14% - Abhyrab) for animal bite case management. Rabipur was the most common Anti Rabies Vaccine known to the Medical Officers. Sathpathy DM et al, in their study had shown that general practitioners also preferred Rabipur over other Anti Rabies Vaccine[8].

107 (89%) of Government Medical Officers knew that modern tissue culture vaccine for prevention of rabies should not be given in the Gluteal region. In a study conducted by Subhas Babu P et al, 65.3% of the Medical officers were aware that modern tissue culture vaccine for post exposure prophylaxis should not be injected into the Gluteal region.[6] 93 (77%) of Government Medical Officers knew that modern tissue culture vaccine for prevention of rabies can be given to pregnant women. In a study conducted by Subhas Babu P et al 66.3% of the medical officers informed that modern tissue culture vaccines can be administered during pregnancy.[6]

85 (71%) Medical Officers knew about the correct route, site and schedule of Anti Rabies Vaccines. Out of 85 only 27 (32%) medical officers knew about intra dermal Vaccination schedule and practicing it and 58 (68%) medical officers were having knowledge regarding intra muscular regimen and are practicing it.

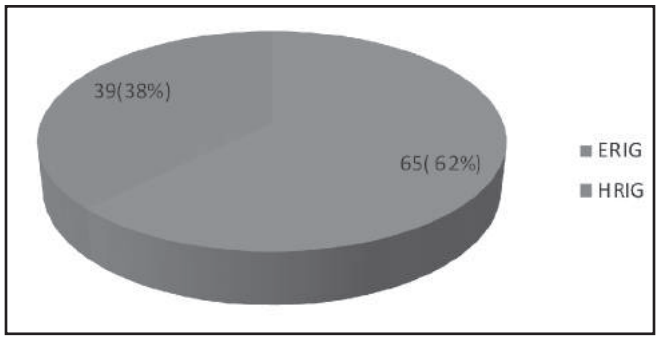
Fig 1: Knowledge about Intradermal and Intramuscular vaccination schedule



In a study conducted by Subhas Babu P et al, 85.3% of the Medical officers were aware of the correct schedule of the intramuscular Essen Regimen while 88.4% of the medical officers were aware of intra dermal vaccination schedule.[6] In a study by R.K. Nayak et al, correct schedule of vaccination was practiced by only 69% of MBBS doctors.[9]

104 (87%) Government Medical Officers had the knowledge about any type of Rabies Immunoglobulin (RIG) out of which 65 (63%) knew about Equine RIG and only 39 (37%) knew about human RIG. Only 22 (23%) out of 94 Medical Officers could tell about the correct dose of Human RIG and 38 (40%) about the Equine RIG. In a study conducted by Subhas Babu P et al, only 17.9% of the Medical officers were aware of the correct dose of equine rabies immunoglobulin.[6]

Fig 2: Knowledge about correct dose of RIG



Conclusions

Majority of the Government Medical Officers had knowledge regarding first aid in animal bite case management and different types of Anti Rabies Vaccines. But there is lack of knowledge regarding Intra dermal Vaccination schedule. Also there is lack of knowledge regarding different types of Rabies Immunoglobulins available for animal bite case management and their correct dose.

Recommendation

Continued medical education program is required to improve knowledge and bring a change in the practice of Government Medical Officers regarding Intra dermal Vaccination schedule and Rabies Immunoglobulin; so that deaths due to rabies can be prevented.

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ORIGINAL ARTICLE

Thyroid Function Tests : Are They Mandatory In Every Case Of Thyroid Disease?

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ABSTRACT

Objectives: To assess the significance of requesting serum thyroid function tests in different types of thyroid lesions and to establish their utility as a diagnostic tool in these lesions.

Material and Methods: This was retrospective study of 100 cases of both sexes, presenting with a thyroid swelling and in whom TFT was requested. The study was carried out in our Institute, Sanjeevan Medical Foundation's ENT Post-Graduate Institute, Miraj and our sister Institute, Shri Siddhivinayak Ganapati Cancer Hospital, Miraj.

Results: The most common TFT status of the patients in our study was Euthyroid (65%). Patients were classified as having goiter (43%), thyroiditis (26%) and thyroid malignancy (31%). Goitres and thyroid cancers were euthyroid in general while Hashimoto's thyroiditis showed a wide variation in the TFT status. About 12% Hashimoto's thyroiditis patients had subclinical hypothyroidism.

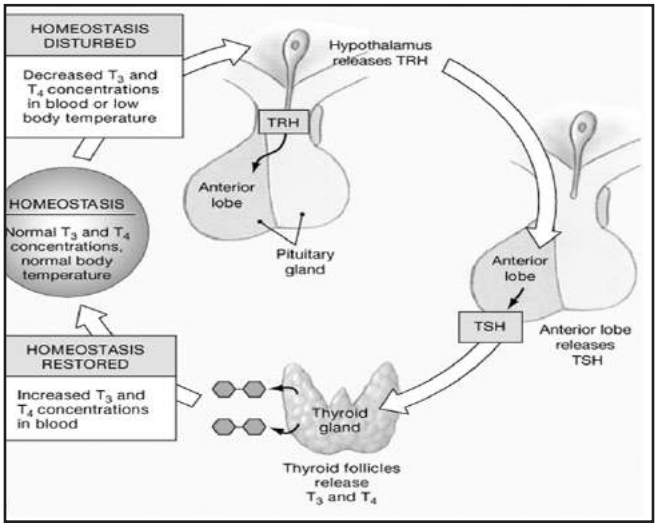
Conclusion : 1) Serum TFT is an important investigation for the classification of thyroid swellings especially benign goiters and Hashimoto's thyroiditis, and also to prevent anaesthetic complications before surgery.

2) As such, they do not change the line of treatment in malignant thyroid disease but are important for post-operative follow up, supplementation therapy and also in planning radioactive ablation.

Keywords : Thyroid Function Tests, TFT, Hyperthyroidism, Hypothyroidism, Retrospective study, Goitre, Hashimoto's Thyroiditis, Thyroid Cancer.

Introduction

Thyroid gland is an endocrine gland situated in the neck below the level of thyroid cartilage. Anatomically, it consists of two lobes joined to each other at the isthmus. Histologically, it consists of thyroid epithelial cells, follicles and parafollicular cells. Thyroid epithelial cells secrete the thyroid hormones, triiodothyronine(T3) and tetraiodothyronine(T4). Thyroid hormone secretion is regulated by the pituatary gland through the Thyroid Stimulating Hormone (TSH) which in turn is regulated by the Thyrotropin Releasing Hormone (TRH) from the hypothalamus.



Regulation of thyroid hormone secretion by the endocrine system

Thyroid Function Tests

Thyroid dysfunction is common in adults and can be diagnosed accurately by thyroid function tests.[1-5] Commonly done tests include estimation of serum TSH, serum T3 and serum T4 which are together included in the broad category of serum Thyroid Function Tests (TFT). Free T3 and free T4 estimations are also done routinely in Western countries but are not common in India. Ultra TSH assays are done to assess minimum detectable values of TSH upto o.o5 µIU/ml. Serum Thyroglobulin assay is done in post thyroidectomy cases of malignancy.

According to the guidelines of American Thyroid Association and American Association of Clinical Endocrinologists, serum TSH measurement is the single

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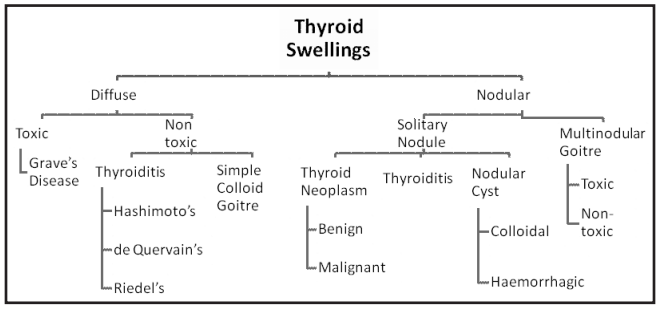
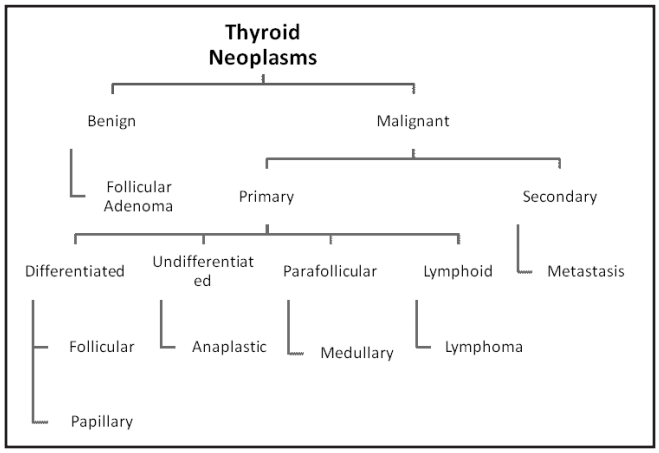
most reliable test to diagnose all common forms of hypothyroidism and hyperthyroidism particularly in the ambulatory setting.[6,7] TSH confirms or excludes the diagnosis in all patients with primary hypothyroidism, an elevated concentration being present in both overt and mild hypothyroidism.[4] Patients with hyperthyroidism have serum TSH concentration less than 0.1 mIU/L and usually less than 0.05 mIU/L. A serum TSH within the euthyroid reference interval almost always eliminates a diagnosis of hyperthyroidism.[8] Free T4 levels can be ordered when TSH level is abnormally high or low. This TSH centered strategy for initial evaluation of thyroid function is both cost effective and medically efficient.[9,10]





Objective

1) To assess serum TSH, T3 and T4 levels in a patient presenting with a thyroid swelling.
2) To note the variations in the TFTs in different thyroid disorders which have been co-related by FNAC or histopathology.
3) To establish TFT as an important investigation in the work up of a patient with a thyroid swelling.
4) To establish the importance of obtaining Euthyroid status prior to surgery.
5) To decide if TFT is really required in malignant thyroid lesions.

Materials and methods

This was retrospective study of 100 cases of both sexes, presenting with a thyroid swelling and in whom TFT was requested. The study was carried out in our Institute, Sanjeevan Medical Foundation's ENT Post-Graduate Institute, Miraj and our sister Institute, Shri Siddhivinayak Ganapati Cancer Hospital, Miraj.

The study was carried out between June 2013 and June 2014. It included 88 female and 12 male patients.

The patients' demographic data, the main presenting complaint for which the TFTs was requested, as well as the results of these tests and the different diagnoses reached were noted. The diagnosis was confirmed by FNAC in non-operated cases and by histopathology in operated cases. The cost of requesting these tests was also calculated. Patients who were already on thyroid medication at the time of presentation were discarded.

Results

The following table shows the serum TFT status of the 100 patients in our study.

TFT status	Euthyroid	Hypothyroid	Subclinical Hypothyroid	Hyperthyroid
No of patients	65	13	4	18

The diagnostic distribution of the thyroid swellings was as in the table below. The diagnosis was confirmed by histopathological study of the specimen in patients who underwent surgery, while FNAC of the swelling was used as a criteria to predict the diagnosis in patients who were not operated upon.

Diagnosis	Nodular Goitre	Colloid Goitre	Hashimoto's Thyroiditis	Follicular Adenoma	Follicular Carcinoma	Papillary Carcinoma	Medullary Carcinoma	Metastatic Medullary Ca
No of patients	25	18	26	6	8	12	2	3

The correlation between the various thyroid pathologies and the respective TFT statuses among patients having those pathologies is as given below.

Diagnosis/TFT Status	Euthyroid	Hypothyroid	Subclinical Hypothyroid	Hyperthyroid	Total
Nodular Goitre	18	1	1	5	25
Colloid Goitre	17	0	0	1	18
Hashimoto's Thyroiditis	7	8	3	8	26
Follicular Adenoma	6	0	0	0	6
Follicular Ca	5	0	0	3	8
Papillary Ca	10	1	0	1	12
Medullary Ca	2	0	0	0	2
Metastatic Medullary Ca	0	3	0	0	3
Total	65	13	4	18	100

Discussion

Serum TFTs were requested in patients presenting with a thyroid swelling. The TFT status was compared with the FNAC/Biopsy reports.

Benign thyroid swellings

It was found that goitres were almost always euthyroid and can be managed conservatively. Hashimoto's thyroiditis patients showed wide variations but they too could be managed by either thyroxine suppression or supplementation. About 20% nodules were hyperfunctioning but these were usually benign and hence managed conservatively.[11] Follicular adenomas were all euthyroid but were operated to rule out malignancy.

Subclinical Hypothyroidism

Subclinical hypothyroidism is a term given to a patient who is asymptomatic clinically, has normal T3 and T4 levels, but has a raised TSH level.

About 12% of Hashimoto's thyroiditis patients in our study had subclinical hypothyroidism. Though the actual number is quite small, it is important to treat this condition because cardiac arrhythmias, especially atrial fibrillation, are common in this condition. Also, osteoporosis is common in post-menopausal women who have subclinical hypothyroidism.[13]

Role in Thyroid Cancer

Most of the Thyroid Carcinomas were euthyroid except for metastatic medullary carcinomas which were hypothyroid (this was quite surprising but can be attributed to the fact that they were recurrent cases who were operated upon earlier). TFT did not alter the course of treatment in malignancy. Attaining euthyroid status was only important to prevent anesthetic complications.[14]

Also, following surgery in malignant cases, it is important to do a TFT assay prior to starting Radio-iodine Ablation therapy to know the TSH levels. Ablation is most effective when TSH levels are maximal (>30μIU/ml), usually done 3-4 weeks after total thyroidectomy.[12]

TFT should be done post-operatively when total or subtotal thyroidectomy is performed. Thyroxine is given as replacement therapy and TFT status should be assessed after regular intervals. It has no therapeutic role in malignancy, especially medullary carcinoma, as tumour cells are not under the influence of TSH. [12]

Anasthetic Complications

Anasthesia in a hyperthyroid state may lead the patient into Thyroid Storm, a life- threatening medical emergency requiring immediate intervention and intensive care treatment.

Induction of anesthesia in a hypothyroid patient may lead to complications like anemia, hypoglycemia, hyponatremia, decreased free water excretion and impaired hepatic drug metabolism.[15] Thus our anaesthetic team always insisted on obtaining a Euthyroid status before giving anaesthetic fitness for surgery except of course in certain exceptional circumstances, as seen in one case of Hashimoto's thyroiditis, where the swelling was so huge that the patient was breathless and needed immediate tracheostomy and excision of the swelling.

Medicolegal Consideration

Assessing the TFT status is important, especially when total or subtotal thyroidectomy is being planned. It is crucial when the patient is already hypothyroid preoperatively. Along with this it must be explained to the patient before the surgery that he may require thyroxine supplementation lifelong post-operatively.

Conclusions

It was concluded that serum TFT is an important investigation in the classification of thyroid swellings. It helps to decide the choice of treatment in benign goitres and Hashimoto's thyroiditis, which are not causing any pressure symptoms and cosmetically not distorting. It is important to correct subclinical hypothyroidism for fear of developing cardiac arrhythmias even if the patient is asymptomatic and the swelling not causing any pressure symptoms. It is not important in malignant cases per se as regards to the choice of treatment but it is necessary to obtain a Euthyroid status to prevent anesthetic complications. All cases of malignancy should undergo a TFT assay prior to starting Radio-iodine ablation post-surgery. Also, TFT should always be sought before any surgery is planned, in view of medicolegal aspects.

All in all, it was thus concluded that requesting serum thyroid function tests is a must in all cases presenting

with a thyroid swelling and the clinician should not be ignorant to the efficacy of this important investigation.

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ORIGINAL ARTICLE

"Effectiveness Of Teaching Evaluation Methods In Physiology"- Students Feedback

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Introduction

Learning is the acquisition of knowledge or skills as a consequence of experience, instruction, or both. To a psychologist, learning is an issue of individual potential motivation and a performance of personal intent. To an educator, good learning ought to evoke the learner's imaginative power, foster intellectual development, develop interpersonal skills, promote creative skills, enhance the ability to solve problems and boost capacity to perceive and explore the real world . [1]

Assessment test, is an integral part of guided and thought-provoking further learning process. Assessment is an educational tool that serves multiple roles; for example, it can provide feedback to learners on areas of strength or weakness and it can provide the teacher insight into the effectiveness of a given approach[2]. From the ancient years students are evaluated by their grades in the exam, viva without considering evaluation of teachers skills, teaching methods, etc. Recently medical faculties focusing on the overall development of medical students. Thus shifting their view from a teacher centered teaching to the student centered learning. so along with students, evaluation of teaching methods, teaching skills of teachers, curriculum should be done regularly. This is made possible by providing feedback by students.

The subject of Physiology is considered as the basis of rational medical practice so its teaching has been a paradigm shift in recent years as emphasis is now focused on learning[3]. The term "Evidence Based Medical Education" was coined to describe the implementation of methods and approaches to education based on the best available evidence[4].

Objectives

1. To evaluate different teaching methods and evaluation methos used in physiology.

2. To find out the best method for understanding and retaining the subject according to students' point of view

3. To find out their overall perception regarding first year M.B.B.S. in context to timing, duration etc

Materials And Methods

It is a cross sectional study based on anonymous Questionnaire. The questionnaire was given to students of three successive batches just after completing the first professional undergraduate medical examination . After taking permission from the institutional ethical committee questionnaire was filled for eliciting feedback from students first year MBBS students after their university exam was over in three successive batches. The data collected was analyzed using SPSS 14. The Chi-square test was used to examine the association between different variables. Open ended questions were analyzed by the researchers individually .Depending on the frequency of different statements , the research group agreed on a common, collective consensus on the analysis of these comments.

Results and observation

Three hundred students participated in the study from consecutive years from 2011, 2012 & 2013. Out of total participants 127 (42.3%) were male and 173 (57.7%) females. In our study, practical & demonstration (99%) is best form of teaching learning method in students. Majority of the students accepted revision cum self study (95%) then lectures & tutorials (93%) each as good or

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very good method (table I). seminar which is less acceptable (77%). And the lest preferred method is quiz (71%). Also few quoted as not use full and useless also.

Table I: Teaching and learning methods

Teaching & learning method	Very good	Good	average	Not useful	useless
Revision cum self study	150(51.5%)	129(44.3%)	12(4.1%)		
Lecture	132(44.0%)	147(49%)	21(7%)		
Tutorials	132(44.0%)	147(49.0%)	21(7.0%)		
Practical / Demonstration	198(66.0%)	99(33.0%)	3(1.0%)		
Seminar	141(47.5%)	91(30.6%)	56(18.9%)		
Quiz	105(40.7%)	82(31.8%)	59(22.9%)	6(2.3%)	6(2.3%)

In evaluation methodology, preliminary exam at was found to be the most useful method (98%) in preparing for their final university examination followed by terminal exam (97%), and tutorials (88%) followed by class test (77%) .

Evaluation methods	Very good	Good	average	Not useful	useless
Tutorial	171(57.0%)	93(31.0%)	27(9.0%)	9(3%)	
Class test	192(64.0%)	99(33.0%)	9(3%)		
Terminal exam	201(67.0%)	90(30%)	9(3%)		
Preliminary exam	237(79.0%)	57(19%)	3(1.0%)	3(1.0%)	

Table II : Evaluation methods

192 (64%) felt that 12 months period was enough for completion of their first year in MBBS syllabus followed by 78 (26%) wants the duration should increase to18 months and remaining 30 (10%) students thought it should be decrease to 9 months. The current timing of our college is 8.30am to 4.30pm with 1 hour lunch break at 1pm. 261 students (87%) were satisfied with current timing.

In our set up we are having Tuesday, Thursday & Saturday physiology+biochemistry classes. Monday, Wednesday & Friday anatomy classes. When asked about their opinion on this different days in week schedule 285 (95%) were happy with it.

Practical demonstrations given by Professors were preferred by majority of students 130(43%) followed by Lecturer 54 (18%) and Associate professor 53(17%) followed by Tutors 48 (16%). Most of the students (96%) felt that most of their queries were resolved during practical demonstrations.

165 (55%) students were knowing about the horizontal integrated teaching and 132 (44%) students were unaware about it.

Suggestions of the students :

1. More focus on conceptual learning
2. More animation in the lecture
3. Reduce the one hour lecture duration
4. More coordination of lectures in 3 dept (anatomy, physiology, biochemistry)

Discussion

Student's feedback on teaching methods provides a platform for the teachers to modify and improve the quality of the medical education. As Continuous quality improvement and innovation are must in medical education. In turn, it will benefit the students in understanding the subject better and also help them to develop the required skills for a meaningful medical career.

Physiology being the basis of medicine, if not well understood, students cannot perform well in clinical subjects as well as in practice. A good teaching is a medium which enables student learning through a focus on conceptual understanding rather than didactic lectures. Good teaching makes learning a pleasurable experience. It creates a positive feeling in students; i.e. they develop interest in the subject which enables them to make appropriate use of their cognitive abilities to understand and question the facts presented to them[5]. The ultimate goal of this study is to identify the positive and negative aspects about the current teaching & evaluation methodology in Physiology practiced in our college.

Our study reveal that students are satisfied with the present teaching methodology consisting of revision cum self-study, lectures, tutorials and demonstrations, but 95% of the students demanded more time for revision cum self-study. Self study is considered to be very effective method in earlier studies as well.

In evaluation methodology, preliminary exam at was found to be the most useful method (98%) followed by terminal exam in preparing for their final university. May be because on basis of these two examination internal assessment marks are calculated. Our findings are similar with other studies[6].

Regarding the sequence to study systems, the present pattern being followed in our college is nerve & muscle

physiology, blood, respiratory system, CVS, excretory, CNS, special senses, system, endocrinology, GIT and reproductive system. The best sequence to study systems felt by the students was this pattern only. They felt that this order helps them understand the systems better.

Inspite of universal complaint of preclinical teachers for having less time for teaching majority of students seem to be happy with available time for Ist MBBS Course. This needs deep thinking by preclinical teachers. Also, students were satisfied with the current timings and day slots allotted to three subjects (Anatomy, Physiology, Biochemistry), because this schedule allow them to have ample of time for revision cum self-study. Practical demonstrations given by Professors were preferred by majority of students over Associate professor, Assistant professor and tutors because professors teaching is more integrated manner than rest of faculty.

Maximum students aware about integrated teaching. They wanted horizontal integration while teaching physiology with other two subjects of first year. Topics from physiology like CNS & Special Senses should be taught with Anatomy and Blood, Endocrine systems should be taught with Biochemisrty.

It would have been interesting to analyze & compare the feedback given by students who have passed and students who have failed. It could be the limitation of this study.

In conclusion, Learning is a complicated activity. Students aim to master knowledge and skills for their career. Teachers aim to pass on knowledge and enhance student learning. The students undoubtedly are in the best position to comment on the effectiveness of any teaching and evaluation system. Such feedback may help the teachers to plan the curriculum and improve upon the teaching and evaluation methodologies adopted in their institutions. The results of such feedback can be keep in mind while implementing changes in next year students.[7,8,9,10]

Conflicts of interest- none

Acknowledgement

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SHORT COMMUNICATION

Amitraz - New Emerging Poison

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Organophosphorous compound poisoning is a well known major poisoning in India especially in Maharashtra. Recently Amitraz is being used as a suicidal poison in farmers in rural areas of Maharashtra. Three cases of Amitraz poisoning, probably for the first time in India, were reported in 2010 from Kolhapur by Shitole et al.(1), followed by a case report by Chakraborty et al. from Manipal.(2) It is a rare cause of poisoning in human beings. The earlier reports of accidental poisoning in children are mainly from Turkey (3). Despite life threatening presentations, recovery occurs in most of the cases. Amitraz is a pharmaceutical, veterinary and agricultural product which is used worldwide as an acaricide, insecticide and antiparasitic. It is used for pest control of ticks and mites on cattle and sheep, generalised demodicosis in dogs and red spider mites on fruit crops(4). Poisoning may occur by oral ingestion, inhalation and dermal routes. It mimics organophosphorous poisoning except for the smell of OP compound. The reported clinical features are varied and include giddiness, vomiting, drowsiness, disorientation, unconsciousness, convulsions, miosis/ mydriasis, respiratory failure, tachypnoea, hypothermia, hyperglycemia, glycosuria, bradycardia and hypotension. There is no antidote for Amitraz poisoning.(5).

Mechanism of action

Amitraz is a formamidine compound which is predominantly an alpha 2 adrenergic agonist. The stimulative effects of alpha 2 receptors are responsible for its neurotoxic effects & proconvulsant side effects. It stimulates alpha 2 receptors in CNS and also alpha 1& alpha 2 receptors in PNS. At low doses it has stimulative effect resulting in hyperactivity. At high doses it produces CNS depression, respiratory depression, bradycardia, hypotension. Presynaptic effect at low doses result in miosis while postsynaptic effect at high doses produce mydriasis rarely.Stimulation of alpha 1 & 2 receptors in PNS produce hyperglycemia,polyuria ,GI hypomotility, It also inhibits synthesis of prostaglandin E2 resulting in hypothermia. Polyuria occurs due to inhibition of Antidiuretic Hormone and renin. It has potent hepatotoxic action by decreasing hepatic glutathione activity. Toxicity is attributed to both Amitraz and solvent Xylene which worsens CNS depression producing stupor and coma.(6)

Product names include Tik Tak, Avartin, Baam, Mitaban, Triatox, Triazid, Topline, Tudy, Ectodex, Danicut, Mitac, Amitraz, Rootraz etc. The formulations available for commercial use contain 12.5-50% of Amitraz in an organic solvent like xylene and is diluted with water before use. Plasma levels of Amitraz are unlikely to be of clinical use as it is rapidly metabolized.

Clinical features

It has CNS stimulative and depressive effects which are dose dependent. CNS depression developing within 30 to 180 minutes is the most common manifestation. Seizures have been reported by Yilmaz et al which responded to treatment with injectable diazepam or lorazepam (7). It is also a cardiotoxic agent causing bradycardia & hypotension. Bradycardia is sometimes accompanied by miosis, wherein this may be mistaken for organophosphorous poisoning. Amitraz is also a potent hepatotoxic drug which causes rise in SGPT & SGOT levels. Amitraz causes gastric stasis, inhibits insulin release causing hyperglycemia and causes polyuria due to ADH inhibition. It causes hypothermia by inhibiting PGE2. It is metabolized rapidly hence rapid recovery is always seen.

Treatment

As there is no antidote for Amitraz, treatment is mainly

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supportive and symptomatic. Stomach wash is generally not recommended except in cases of consumption of large amount of the compound. The treatment includes oxygen supplementation, airway maintainance, mechanical ventilation and haemodynamic stabilization by appropriate intravenous fluid therapy and vasopressors. Seizures can be by lorazepam or diazepam.(7) Atropine is rarely required for bradycardia. Phentolamine has been suggested in cases with large amounts of Amitraz consumption. (8)

Conclusion

Increased use in veterinary medicine has led to the rising incidence of Amitraz poisoning. Considering a rising trend in misuse of Amitraz for deliberate self harm, Public health education & instructions to drug producing companies with continued toxicovigilance would go a long way in primary prevention & decreasing the menace of Amitraz poisoning .

(I am thankful to Dr. Niveditta Girimaji for her help in preparation.)

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CASE REPORT

Unusual Spectrum Of Facial Malignancies: Report Of Four Cases

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ABSTRACT

Background: Face is a favoured site for cutaneous malignancies with non-melanoma skin cancers comprising majority of cases. Amongst risk factors are prolonged ultraviolet radiation and DNA repair defects.

Case details: We report series of four cases describing spectrum of facial malignancies like sclerotic and pigmented forms of basal cell carcinoma and sebaceous cell carcinoma which are rarely encountered. This includes 83 year old male farmer with morpheaform basal cell carcinoma, 70 year old female farmer with basosquamous carcinoma, seven year old female child of xeroderma pigmentosum with squamous cell carcinoma and a 60 year old male farmer with sebaceous carcinoma. The diagnosis in each case was confirmed by histopathology.

Conclusion: Facial malignancies can be clinically confounding. Histopathology and immunohistochemistry facilitate early detection and accurate diagnosis.

Key words: Facial malignancies, skin cancer, basal cell carcinoma [BCC], squamous cell carcinoma [SCC], histopathology.

Introduction

Non-melanoma skin cancer [NMSC] is the most common human cancer.[1] The term encompasses basal cell carcinoma [BCC] and squamous cell carcinoma [SCC] of the skin, which are both derived from epidermal keratinocytes. Amongst other skin cancers are melanomas which are malignant tumours arising from epidermal melanocytes and relatively rare appendageal cancers. Fortunately, in contrast to other common epithelial cancers, NMSCs rarely metastasize, which means that the case fatality rate for these cancers is low.[1]

The diagnosis of these cancers is accomplished by accurate interpretation of the skin biopsy results.[2] Surgery is the mainstay of treatment. Other treatment modalities are radiation therapy and topical therapy for in situ disease only.

Case report:

Case 1: An 83 years old male farmer presented with asymptomatic, rapidly progressive, hypo-pigmented, depressed plaque (8x3cm) with rolled out margins and crusted erosions over right cheek encroaching to right side of nose (Figure 1a). General and systemic examination was unremarkable. Routine haematological investigations revealed anaemia. Mantoux test, ESR, C-reactive proteins, were negative. Chest x-ray was normal. Histopathology of skin (Figure 1b) showed islands of basaloid tumour cells in the form of lobules and cords in thickened collagenous stroma. Special stains for acid fast bacilli and mycobacterial cultures were negative. Thus we arrived at the final diagnosis of morpheaform basal cell carcinoma. Patient was not willing for surgery. Currently the patient is under treatment with topical 5-flurouracil and retinoids with gradual improvement.

Case 2: A 70 years old female farmer presented with a well-defined, black, infiltrated plaque (1.5x1cm) with irregular borders over right cheek. General and systemic examination was unremarkable. Routine blood investigations, chest x-ray, ultrasound abdomen were within normal limits. Histopathology of lesion showed islands of basaloid cells in the form of cords and nests in reticular dermis with interstitial mucin and pigment deposition, and tumour lobules of squamoid cells connected to epidermis. Thus our final diagnosis was basosquamous carcinoma. Patient was unwilling for

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surgical removal of the lesion, and currently is under treatment with combination of topical 5-flurouracil and retinoids with partial regression.

Case 3: A seven years old female child, known case of xeroderma pigmentosum presented with well-defined fixed, ulcerated nodule (4x4cm) with crusting and haemorrhages over nose. General examination revealed frail and weak child with growth retardation. Ophthalmic examination showed bilateral corneal opacities. Routine haematological investigations were within normal limits. Contrast enhanced computed tomography [CECT] of chest and abdomen showed no systemic dissemination or second primary tumour. Incisional biopsy and histopathological examination demonstrated islands of tumour cells and squamous eddies extending into dermis with apoptotic keratinocytes in the tumour lobules suggestive of squamous cell carcinoma. Patient underwent wide local excision and was advised sun-protection. In addition, oral isotretinoin therapy was initiated for chemoprophylaxis and to minimize chance of recurrence.

Case 4: A 60 years old male farmer presented with single, firm, non-friable, pedunculated, bosselated, crusted, flesh coloured, nodulo-ulcerative, fixed growth (4x3cm) with yellowish slough and haemorrhages over right temple (Figure 2a). General examination revealed ipsilateral, single, non-tender, mobile, pre-auricular lymph node approximately 1 cm in size. Systemic examination was unremarkable. Routine blood investigations, HIV-ELISA, ultra-sonography of abdomen and pelvis were within normal limits. Fine needle aspiration cytology of the pre-auricular lymph node showed chronic non-specific lymphadenitis. Incisional biopsy and histopathology of lesion (Figure 2b) showed sebaceous ducts, islands of foamy cells with scalloped nuclei and mitotic figures extending into the dermis, suggestive of sebaceous origin, which prompted the diagnosis of sebaceous carcinoma. The lesion was excised completely with no recurrence during six month follow up period.

Discussion

The past few decades have witnessed a steady increase in the worldwide incidence of skin cancer with highest incidence observed in white population.[3] Although the exact incidence in India is not known, NMSC is known to be uncommon in Asians.[3]

Most studies indicate that BCCs account for more than 70% of the cases of NMSC in areas with both high and low ambient sun exposure.[1] Among dark skinned individuals, SCC is commoner than BCC. Various studies from India consistently report SCC to be the most prevalent skin malignancy.[3]

Skin cancers are most often found on areas of the body that are routinely exposed to sun, such as face, neck, ears and dorsa of hands. Ultraviolet radiation is by far the most important and best understood risk factor for non-melanoma skin cancer [NMSC] development.[1] Other risk factors include exposure to ionizing radiations, arsenic or organic chemicals, human papilloma virus infection, immunosuppression, burn scars, chronic ulcers, genetic predisposition and DNA repair defects.[4] Whereas BCC is thought to arise de novo, SCC probably evolves in most cases from precursor lesions of actinic keratosis [AK] and Bowen's disease [SCC in situ].[5]

BCC is more common in elderly individuals, but is manifesting with increasing frequency in people younger than 50 years of age. Men are affected slightly more often than women.[2] There are four major distinctive clinicopathologic types of BCC, namely, nodular BCC (the most common type), superficial, morpheaform and fibroepithelioma of Pinkus. Pigmented BCC is a subtype of nodular BCC. Even though the majority of BCC are amelanotic, pigmented BCCs are observed more commonly in individuals with darker skin phototypes.[4]

The clinical presentation of BCC can be quite variable. It may be a papulonodular lesion with pearly translucent edge, an ulcerated destructive lesion [rodent ulcer], a pale plaque with variable induration, an erythematous plaque with visible telangiectasia, a partly cystic nodule, a cutaneous horn overlying a nodulo-ulcerative lesion or a variant with resultant facial mutilation.[3] As a consequence, a number of histopathological subtypes of BCC have been identified, such as cystic, micronodular and basosquamous BCCs.[3]

BCCs are composed of aggregations of basaloid keratinocytes within a variably fibromyxoid stroma with focal connection to the undersurface of epidermis.[4] A characteristic feature of BCC is retraction of the stroma

around the tumour islands, creating microscopically visible clefts. As encountered in our patient, morpheaform BCC, also called infiltrative or sclerosing BCC, consists of strands of tumour cells embeded within a densely collagenised fibrous stroma.[2] Basosquamous carcinoma is a form of aggressive growth BCC which displays both basal cell and squamous cell carcinoma differentiation in a continuous fashion,[2] as we noticed in our patient. We encountered this rare variant of BCC, which constitutes only 1% of all NMSCs.[4]

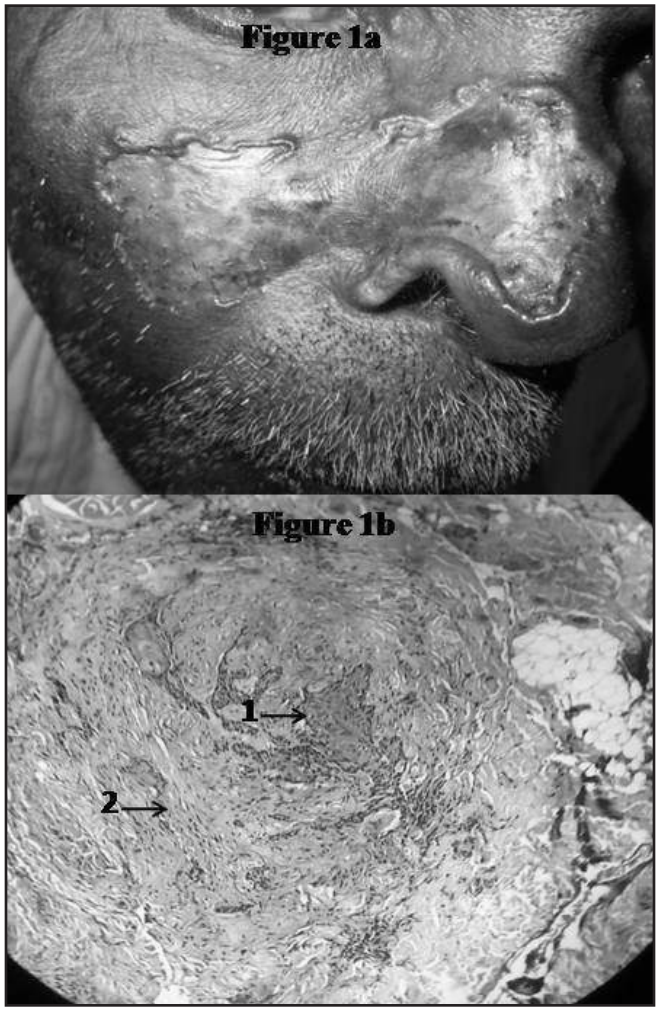

Figure 1a: Well defined hypo-pigmented, depressed plaque with rolled out margins and crusted erosions over right cheek encroaching to right side of nose.

Figure 1b: Skin biopsy showing islands of basaloid tumour cells (arrow 1) in thickened collagenous stroma (arrow 2) [H&E, 10x].

SCC is strongly associated with advanced age, and a sharp increase in incidence is seen after the age of 40 years. SCC is twice as common in men as in women, probably as a result of greater quantum of UV exposure in men.[5] Xeroderma pigmentosum is a rare autosomal recessive disorder with defective DNA repair characterized by extreme sun sensitivity and increased susceptibility to NMSCs and melanomas.[1] NMSCs develop at an early age (median age, 8 years), as seen in our case.[4]

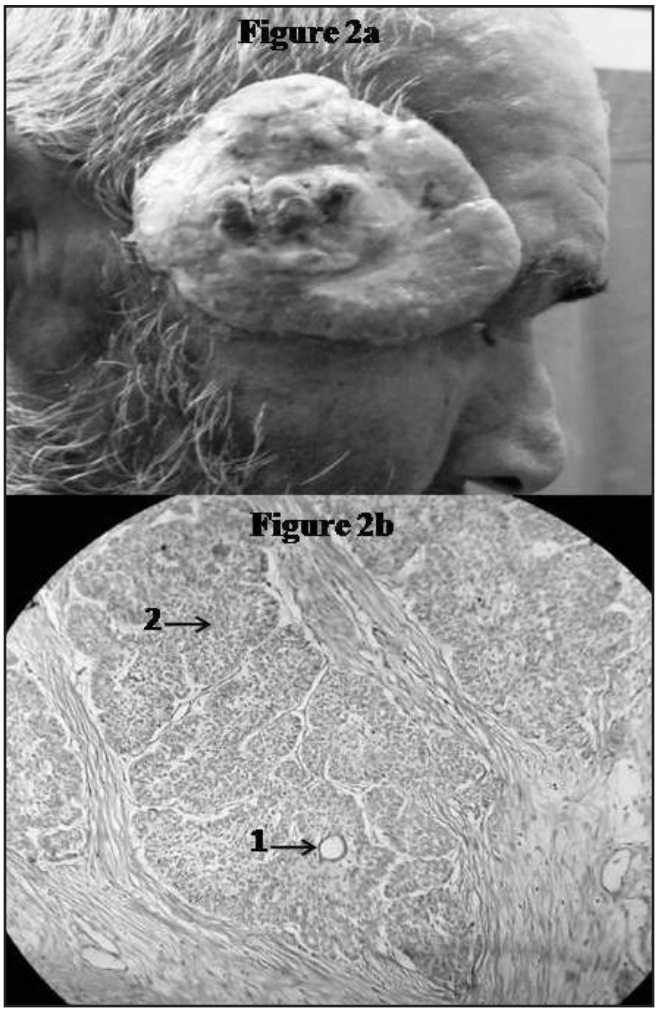

Figure 2a: Firm, non-friable, pedunculated, bosselated, crusted, flesh coloured, nodulo-ulcerative, fixed growth with yellowish slough and haemorrhages over right temple.

Figure 2b: Biopsy of lesion showing sebaceous ducts (arrow 1) with islands of foamy cells with scalloped nuclei (arrow 2) and mitotic figures [H&E, 20x].

The clinical presentation of SCC can be variable despite the existence of easily identified typical lesions. SCCs are often a flesh coloured or erythematous, keratotic papule or plaque; but can be a thick cutaneous horn, a verrucous exophytic growth, an ulcer or a smooth nodule as we encountered in our patient which is a very unusual

finding.[5]

SCC consists of irregular masses of anaplastic squamous cells that proliferate downward into the dermis. Poorly differentiated SCCs contain higher number of atypical squamous cells. Keratin pearls are very characteristic structures composed of concentric layers of squamous cells showing gradually increasing keratinisation toward the center. Immunohistochemical methods are of considerable value to distinguish between poorly differentiated SCC and mesodermal tumours such as atypical fibroxanthoma and malignant fibrous histiocytoma, and from malignant melanoma.[6] SCCs are pan-cytokeratin or a cytokeratin-13 positive, in contrast to mesodermal tumours and malignant melanoma.[6]

Sebaceous carcinoma is a rare aggressive tumour comprising less than 1% of all skin malignancies, which may be ocular or extraocular.[7] We encountered extraocular sebaceous carcinoma which constitutes one-fourth of all cases of sebaceous carcinoma,[8] with greater potential for aggressive behaviour. Extraocular lesions present as firm, yellow, ulcerated or bleeding nodule on the head and neck; less commonly on the trunk, feet, external genitals and oral mucosa. Histopathologically, sebaceous carcinoma consists of asymmetric, irregular sebaceous lobules in the dermis.

On the eyelids, sebaceous carcinoma may be easily mistaken for chronic blepharoconjuctivitis, chalazion or BCC. Immunohistochemical markers such as epithelial membrane antigen [EMA], anti-BCA-255 [BRST-1] and CAM 5.2 distinguish sebaceous carcinoma from BCC and SCC.[9]

During biopsying a lesion, adequate tissue should be taken. In making a diagnosis, it is imperative to have sections those adequately represent the lesion. It is curious that in punch biopsies the initial sections may not show the tumours. In such situations, serial sections should always be examined, if clinical diagnosis is one of the facial malignancies.

Surgery is the treatment of choice. Surgical approaches include complete excision, destruction by various modalities and Mohs micrographic surgery. Despite surgery being the preferred modality, we started topical treatment (combination of 5-flurouracil and retinoids) in two of our cases respecting their unwillingness to undergo surgery; which are well established alternative treatment options in such situations.[10] The promising new treatment modalities include immunomodulators, photodynamic therapy and drugs that address genetic defects.[4]

Our case series highlights the need for vigilance and adequate histopathological examination in making a diagnosis of facial tumours due to their variable presentations.

Acknowledgement

We thank department of pathology, BJGMC Pune for their assistance and support in doing this research work.

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CASE REPORT

A Rare Syndromic Surprise In Visually Asymptomatic Patient

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ABSTRACT

The clinical picture of a young male with acute psychosis referred for routine fundoscopy to rule out an organic cause revealed bilateral retinal tumors. With no ocular symptoms, careful systemic clinical examination and relevant investigations revealed systemic stigmata correlating with our fundus findings; leading us to diagnose the patient as a classical case of tuberous sclerosis with bilateral non progressive retinal astrocytomas .Importance of Total systemic examination in hand with ocular examination for the accurate diagnosis is emphasized here. With watchful expectancy and close follow up life and sight threatening complications in such patients can be dealt with.

A 17 year old male, Resident of Pune, Fruit vendor by occupation, educated upto 8 std. presented to the Psychiatry Dept. with Chief complaints of aggressive and assaultive behavior, work impairment, talking to self since 8 days.

He was referred to Ophthalmology OPD for a routine fundoscopic examination with No h/o any ocular complaints.

For the acute psychiatric disorder he was on Rx-T. sodium Valproate 550 mg BD.

Past history

Mild mental retardation diagnosed at age of 6yrs

k/c/o refractory seizure disorder since age of 1 yr

On Rx- T. carbamazepine 400 mg BD

Personal history : NAD

No H/O drug abuse

Birth history : FT cesarean section delivery, Cried immediately on birth, no delayed milestones

Family history: NAD

SYSTEMIC EXAMINATION- CVS, RS, P/A WNL

Mild mental retardation present

Adenoma sebaceum, Ash leaf macules, Confetti like pigmentation, Segmental vitiligo were noted

OPHTHALMIC EXAMINATION

Head Posture – normal

Facial symmetry maintained

Ocular Position - orthophoric

Extra Ocular Movements - Both Eyes (BE) full range, painless and free in all directions.

Best Corrected Visual Acuity BE 6/6, BE near vision N6, BE Colour vision normal

ANT. Segment on Slit lamp examination BE was normal;

Intraocular Pressure: RE 9.0 mmHg LE 8.9 mmHg

Gonioscopy BE showed open angles grade (IV)

Fundus examination :

RE (photo no. 1) media clear, disc normal in size and shape, 1 and 1/2 disc diameter (DD) by 1 DD flat intraretinal mass seen supratemporal to disc with no evidence of subretinal fluid s/o **Retinal Astrocytoma**

LE (photo no. 2) : Media clear, 3 DD x 2 DD solid yellow retinal mass with stippled surface arising from retina infero temporal to disc margin obscuring the disc blood vessels seen over the surface, macula normal Fr, Blood vessels normal Intraretinal mulberry tumour s/o **Retinal astrocytoma** On Red free photography mass was seen as autofluorescent.

Fluorescein angiography: RE late phase showing-Late relative hyperflurescent Non leaking Flat Retinal mass Superotemporal to disc, Fovea and Foveal Avascular

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Zone (FAZ) normal, No areas of Capillary non perfusion.

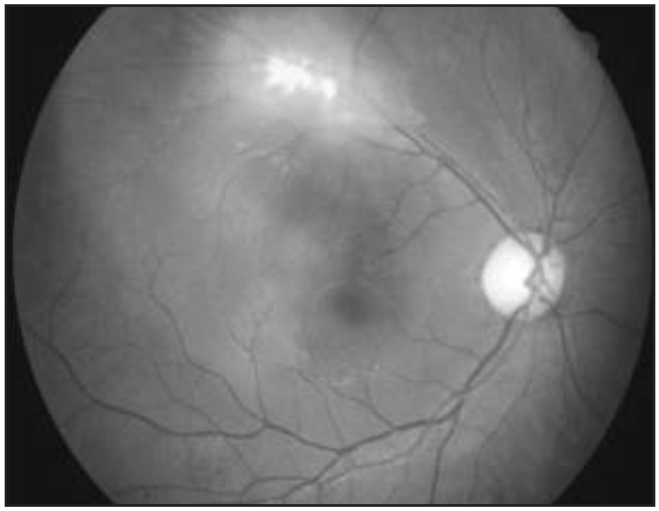

Photo no. 1

RE FUNDUS : 1and1/2 disc diameter (DD) by 1 DD flat intraretinal mass suprotemporal to disc with no evidence of subretinal fluid s/o **Retinal Astrocytoma**

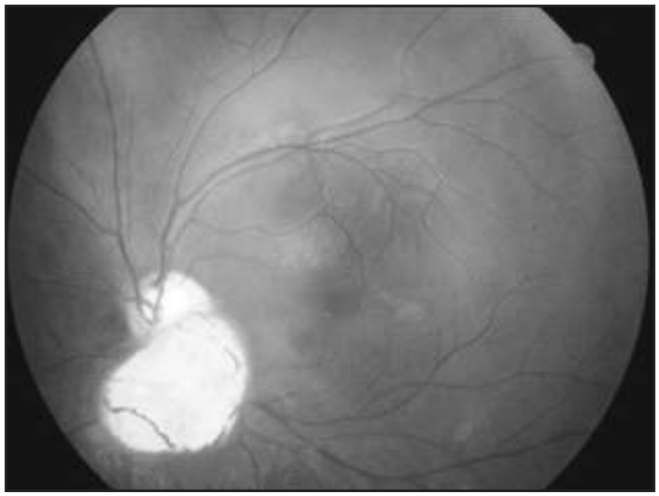

Photo no. 2

LE Fundus : 3 DD x 2 DD solid yellow retinal mass with stippled surface arising from retina infero temporal to disc margin obscuring the disc, blood vessels seen over the surface Intraretinal mulberry tumour s/o **Retinal astrocytoma**

LE: Late phase shows Intra retinal Solid homogenous mass with Late relative hyperfluroscence uniform enhancement Minimal leakages, Fovea FAZ normal

B Scan USG : RE- WNL. LE- shows highly echogenic mass arising from retina next to disc and extending inferiorly, Rest WNL

Visual fields BE - unreliable

OCT - Optical coherence tomography

RE :Subretinal hyper-reflective mass

LE :Subretinal hyper-reflective mass

MR brain :

T1 W scan-Multiple Hypo intense Sub cortical Sub ependymal masses with Largest measuring 8 by 5 mm in foramen monro, S/O brain astrocytoma

MR orbit : T2W scan -Well defined Solitary Iso - hypo intense mass at Left ONH

S/O ON Drusen OR Epi papillary retinal astrocytoma

USG abdomen-B/L Angiomyolipomas

DIAGNOSIS

TUBEROUS SCLEROSIS WITH B/L RETINAL ASTROCYTOMA

MANAGEMENT

Observation and Close follow up

W/F : Exudative RD, Development of multifocal retinal tumours, Development of neovascular glaucoma, Vitreous haemorrhage, Genetic councelling

Discussion

Retinal astrocytoma is a rare and benign tumor of the retina most frequently seen in(1)

a) tuberous sclerosis

b) neurofibromatosis.

c) Sporadic cases (< 30 %)

It is classified as Massive Retinal Gliosis (MRG), Astrocytic hamartoma, Aquired astrocytoma. (2)

Arises from astrocytes of the sensory retina

Location :

a) retina - NFL

b) optic disc

It is a Hamartoma (a benign congenital tumour composed of tissue elements that are normal for the location in which they occur)

multifocal bilateral -tuberous sclerosis

unilateral, unifocal-sporadic nonsyndromic disorder. (2)

Epidemiology :

Arise early in life, frequently detected during childhood or adolescence, affects all ethnic groups and both sexes equally.

Clinical presentation : no visual symptoms unless the tumor involves the macula or the papillomacular bundle, nonrhegmatogenous retinal detachment, Vitreous haemorrhage, Glaucomatous stage, tractional retinal detachment, central retinal vein occlusion. (3,4,5)

Classified as progressive or stationary (3,4)

Clinical appearance : translucent intraretinal patches, nodular, opaque white dense partially, calcified mulberry-like tumors, Intermediate, vascularized from the retina

Diagnosis is made Clinically, by Fluorescein Angiography, B scan, FNAC

Histology : Pilocytic astrocytoma, Giant cell astrocytoma, typical retinal astrocytoma interlacing spindle-shaped fibrous astrocytes with small bland elongated oval nuclei and indistinct wavy cytoplasmic borders. Larger lesions frequently contain foci of calcification, also may contain plump, polygonal cells having eosinophilic cytoplasm that have been termed giant astrocytes. Tumors coexpress neuronal marker neuron-specific enolase (NSE) and glial marker glial fibrillary acidic protein (GFAP). (6)

Systemic Associations

Multifocal bilateral retinal astrocytomas usually occur in the context of tuberous sclerosis (1), cerebral astrocytomas, renal angiomyolipomas, lymphangiomatous cysts in lungs. Baseline Systemic Evaluation is mandatory.

Treatment: no treatment is required if asymptomatic

a) Close follow up

b) Endoresction in selected peripheral retinal tumours(9).

c) In a blind, painful eye, enucleation seems to be the only effective treatment.

d) Radiotherapy by plaque or charged particle beam has not been shown to be effective.(7)

e) PDT (8)

f) Genetic counselling

Importance of Total systemic examination in hand with ocular examination for the accurate diagnosis is emphasized here. With watchful expectancy and close follow up life and sight threatening complications in such patients can be dealt with.

(I am highly indebted to DR. S.V Ambekar for her constant encouragement and guidance throughout this project.)

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CASE REPORT

Successful Anesthetic Management For Vaginal Hysterectomy In A Patient With Moderate Mitral Stenosis And Pulmonary Hypertension Using Combined Spinal Epidural Anesthesia.

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ABSTRACT

A patient of moderate mitral stenosis (1.4 cm^2) with mild pulmonary hypertension was posted for vaginal hysterectomy. We used low dose of hyperbaric bupivacaine 1.5 cc of 0.5% for spinal block, supplemented with epidural lignocaine to achieve an adequate level. This patient was vulnerable to develop complications such as hypotension and tachycardia, should conventional regional anaesthesia be employed. This case report highlights the hemodynamic stability using low dose spinal and titrated doses of epidural anaesthesia in a patient with moderate mitral stenosis.

Keywords: Combined spinal epidural, mitral stenosis, pulmonary hypertension, hysterectomy

Introduction

Rheumatic heart disease is the most common cardiac disorder in developing countries, with mitral stenosis being the single most prevalent lesion.[1] Anaesthetic care requires preoperative optimization, constant intraoperative hemodynamic stabilization, and postoperative pain relief to decrease complications and ensure better outcomes. We describe the anaesthetic management for a vaginal hysterectomy in a 56 years-old female patient with moderate mitral stenosis and mild pulmonary hypertension, using a low dose of 7.5 mg hyperbaric 0.5% bupivacaine of 1.5 cc with 25 µg fentanyl for spinal block, supplemented with epidural lignocaine to achieve an adequate level. The patient had excellent hemodynamic stability and outcome.

Case report

A 56-years-old female, weight 58 kg, with known chronic rheumatic heart disease was scheduled for vaginal hysterectomy with second degree uterine-vaginal prolapse. Closed mitral valvuloplasty had been performed 12 years previously for severe mitral stenosis. At that time, she had complaints of breathlessness grade 3, on echocardiography severe mitral stenosis (valve area-1 cm^2)with severe pulmonary hypertension. Closed balloon mitral valvuloplasty was done, post-dilation mitral valve area achieved was 1.8 cm^2. Patient was started on oral furosemide and spironolactone. Recently, patient was diagnosed hypertensive, controlled on tablet amlodipine 5 mg once daily since 2 years. In obstetric history, she had normal four uneventful vaginal deliveries. On examination she was comfortable, heart rate was 86 beats per minute and regular; blood pressure was 110/74 mm Hg and jugular venous pressure (JVP) was not elevated. There was loud S_1, rumbling mid-diastolic murmur without presystolic accentuation and opening snap. There was no evidence of pulmonary edema, hepatomegaly or peripheral edema. The electrocardiogram (ECG) showed sinus rhythm, 80/minute. Her echocardiogram demonstrated moderate mitral stenosis (1.4 cm^2), trivial mitral regurgitation and dilated left atrium(49 cm). The peak pressure gradient across the mitral valve was 10 mmHg (mean of 5 mmHg), the ejection fraction was 55% and left ventricular systolic function was normal. There was

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mild pulmonary arterial systolic hypertension. Chest radiograph showed cardiomegaly with prominent broncho vascular markings. Hemoglobin was 13 gm%, potassium 4.6meq/L and renal function was within normal limits. Prothrombin time (PT) and International Normalized Ratio (INR) was normal. Informed written high risk consent was taken by explaining risk to patient and relatives regarding heart disease. Night before surgery, she received diazepam 5 mg orally and aspiration prophylaxis (Tab ranitidine150 mg and Tab metoclopramide 10 mg). In addition, antibiotic prophylaxis was given 30 minutes prior to surgery (Inj. ampicillin2 g and Inj. gentamyc in 80 mg).

In the operating room noninvasive blood pressure monitoring, 5 lead ECG and pulse oxymetry was attached and an 18G intravenous line was secured. Her oxygen saturation on room air was 97%, the blood pressure was 116/64 mmHg and heart rate was 82 beats per minute.

The patient received combined spinal-epidural anaesthesia. At the L2-3 level epidural catheter 18G placed and spinal anaesthesia was performed using a 25G Quincke spinal needle in L3-4 level. The patient received 7.5 mg of hyperbaric 0.5% bupivacaine of 1.5 cc and 25 µg preservative-free fentanyl of 0.5 cc making total volume of 2 cc in the subarachnoid space. This resulted in achieving dermatomal level up to T8, which was supplemented with 3 ml 2% epidural lidocaine after 1hour. Intraoperatively patient had dragging sensation while traction over uterus, for which inj. fentanyl 25µg i.v.was given. At the end of surgery, injection tramadol 50 mg was given epidurally. Total surgical time was 2 hours. Total crystalloid of 500ml ringer lactate and 200ml dextrose saline was given. Blood loss during surgery was approximately 100 ml. Furosemide 10mg was given slowly i.v. after surgery. Total urine output was 250 ml. Intraoperative heart rate was within range of 70-80/min and systolic blood pressure was within 110-120 mmHg. Epidural catheter was removed to avoid any infective focus. Patient was having visual analogue score of 0 (no pain) and moving her knees (bromage scale 3- partial motor block). Patient was observed in recovery room for 1 hour, then shifted to ward. Post operative PT/INR and serum potassium level was normal. She was discharged on the fourth postoperative day.

Discussion

In principle, the combination of two different administration of anesthesia routes on the same patient improves effectiveness and reduces side effects.[2] Spinal anesthesia provides fast and reliable segmental anesthesia with minimal risk for toxicity, while epidural anesthesia provides perioperative anesthesia (alone or in combination with general anesthesia), followed by excellent analgesia in the post operative period[3,4]. Moreover, Combined Spinal Epidural (CSE) anesthesia reduces the potential for problems, such as the somewhat unpredictable level of blockade after spinal anesthesia, and the problems of missed segments, incomplete motor block, poor sacral spread and local anesthetic toxicity that can occur with epidural anesthesia[3]. At the present time, CSE anesthesia is widely used in orthopedic, urologic and gynecologic surgery. Major CSE anesthesia benefits are the need for low doses of medications, low incidence of motor blockade, adequate sensory block, the ability to extend the area of blockade if the surgical field needs to be extended, and excellent analgesia[4,5]. There is no evidence to support any particular technique, but cardiovascular stability is the goal.[6]

Our anaesthetic goals were to achieve adequate level of blockade after combined spinal epidural anaesthesia without producing hypotension and consequent tachycardia. Hypotension in such patients may produce myocardial ischemia, and tachycardia may increase myocardial oxygen consumption and also decrease left ventricular filling time, which is a critical factor in mitral stenosis. Our goal in fluid management was normovolemia since hypervolemia may lead to pulmonary oedema and hypovolemia would have decreased her preload.

One case report of Agarwal A et al[7] described successful management of a patient with untreated ventricular septal defect and pulmonary atresia who had hysterectomy under CSE anesthesia.

CSE anesthesia alone, without general anesthesia, intubation or mechanical ventilation, can be a good anesthetic option in patients with severe chronic obstructive pulmonary disease (COPD) who undergo open repair of infra-renal abdominal aortic aneurysm (AAA), if general anesthesia would pose too high a risk

and endovascular repair is not feasible. [8]

Another case series of Flores et al.[9] described three patients undergoing open infrarenal AAA repair under CSE anesthesia, and concluded that CSE anesthesia is a "viable" anesthetic option in patients with severe COPD, because it can preserve spontaneous breathing and provide respiratory benefits over general anesthesia.

Hamlyn EL et al [10]used a low-dose CSE technique in an obstetric patient with mitral stenosis, employing intrathecal hyperbaric bupivacaine 5 mg with fentanyl 20 µg, followed by 5.0 ml epidural normal saline. During surgery, anaesthesia was supplemented by three, 2.0 ml increments of 0.5 % bupivacaine and one bolus of 25 µg fentanyl.

Turker et al[11] used continuous spinal analgesia (CSA) over-the catheter technique (reduces risk of postdural puncture headache) in five patients having moderate to severe mitral stenosis with pulmonary arterial hypertension. Initially, spinal fentanyl25 µg and thereafter increments of fentanyl 10 µg provided effective analgesia during first stage of labour but during the second stage, 0.5% heavy bupivacaine 2.5 mg with saline 0.5 ml was used to supplement analgesia. This technique allowed maternal cardiovascular stability with analgesia for labour and no significant fetal heart rate abnormalities.

Langesaeter[12] concluded that low spinal anaesthesia for caesarean section has also been used with good results in patients with cardiac diseases.

Dresner[13] conducted 34 caesarean sections with cardiac disease under spinalanaesthesia with a success rate of 99%.

General anaesthesia has the disadvantage of increased pulmonary arterial pressure and tachycardia during laryngoscopy and tracheal intubation. Moreover, the adverse effects of positive-pressure ventilation on the venous return may ultimately lead to cardiac failure.[14]

In our patient, a combination of the reliability of intrathecal blockade with the flexibility of an epidural technique provided titratable, hemodynamically stable anaesthesia.

CSE using low dose intrathecal bupivacaine and fentanyl with epidural lignocaine supplementation was adequate for the performance of an uncomplicated surgery with minimal side effects and good clinical outcome.

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CASE REPORT

Recurrent Aseptic Chemical Meningitis Due To Atypical Epidermoid Cyst

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ABSTRACT

An epidermoid cyst is a benign brain tumor accounting for 1% of all intracranial tumors. The commonest site being cerebellopontine angles often intradural in location. Aseptic meningitis is noninfective inflammation of the meninges. It can occur in recurrent manner when associated with epidermoid cyst due to rupture of cyst contents into subarachnoid space resulting in aseptic chemical meningitis. We are herewith reporting a case of recurrent aseptic chemical meningitis due to atypical epidermoid cyst. The diagnosis was established by cerebrospinal fluid studies and magnetic resonance imaging.

Keywords: Epidermoid cyst, cerebellopontine angles, recurrent, aseptic chemical meningitis.

Introduction

An epidermoid cyst is typically a benign brain tumor consisting of ectodermal cells trapped in the developing nervous system. The ectodermal cells lining the epidermoid cyst grow and slough resulting in expansion of the cyst filled with a flaky material. The cerebellopontine angles (40%) being the most common site in the CNS often intradural (90%) in location. They account for approximately 1% of all intracranial tumors. Although these lesions are congenital, patients are usually not symptomatic until the age of 20-40 years. The basis for recurrent aseptic meningitis is related to leak of cyst contents into subarachnoid space resulting in aseptic chemical meningitis which sometime may misdiagnosed initially as bacterial or tubercular meningitis.

Case report

A 35yr old male, married, farmer, presented (1st admission) with complaints of headache since 2 months which was insidious in onset, fever of 10 days, low grade, pain in neck since 4 days with limitation in range of movement at neck. Patient was averagely built, moderately nourished, febrile 38.6 F, pulse 80/min, BP 110/80mmHg, respiratory rate 16/min. Patient was conscious and oriented with neck stiffness. Fundus examination was within normal limits with no papilloedema. Rest of clinical examination was unremarkable. On investigation there was leucocytosis on haemogram & CSF picture showed neutrophilic predominant leucocytosis with total cell count 1152/cmm with 80% neutrophils. CSF protein 76 mg/dl, sugar 35 mg/dl (BSL 98mg/dl). CSF culture showed no growth. MRI brain shows well defined extra axial lesion measuring 3.5 x 2.2 x 1.6 (cm) anterior to pons & medulla. Various sequences was consistent with Atypical Epidermoid Cyst. Patients was treated with IV antibiotic & Steroid. Patients improved clinically.

Figure 1

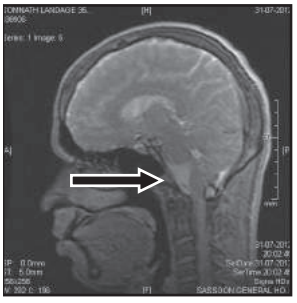

Figure 1. Hyperintensities in T2W image in pre pontine area.

Figure 2

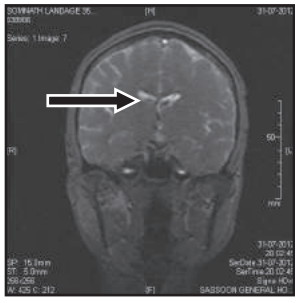

Figure 2. Normal Ventricle, no evidence of hydrocephalus

For atypical epidermoid cyst, neurosurgeon advised serial imaging every six month or report immediately if condition deteriorates. Patient improved and was discharged with the same advise. Patient again readmitted 4 months later with complaint of Headache fever & one episode of convulsion. On examination

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patients was febrile with pulse rate 62/min, BP 140/90 mm Hg, signs of meningeal irritation were present. Repeat CSF showed lymphocytic predominant leucocytosis. CSF culture showed no growth. Repeat MRI showed well defined extra axial lesion measuring 4.1 X 2.4 X 2.1 (cm) anterior to pons & medulla compressing aqueduct. Lateral ventricles were dilated & temporal horns were enlarged. These features were suggestive of obstructive hydrocephalus.

Figure 3

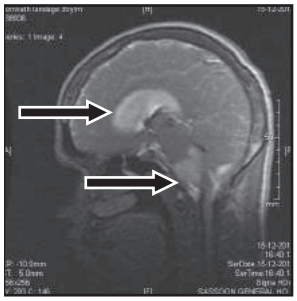

Figure 3- Lateral Ventricle Dilatation S/o Hydrocephalus (upper Arrow) And Enlarged Atypical Epidermoid (lower Arrow)in Pre-pontine Area Compressing Aqueduct

Figure 4

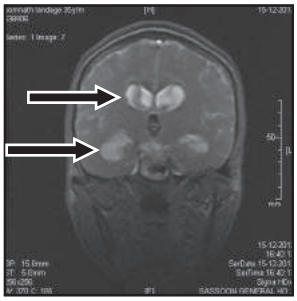

Figure 4-lateral Ventricle Dilatation S/o Hydrocephalus (upper Arrow) And Enlarged Temporal Horn (lower Arrow).

So patient initially presented as bacterial meningitis, later after 4 month with similar episode with lymphocytic predominant CSF picture , but his immune system studies were unremarkable.

After neurosurgery reference, patient underwent surgical removal of cyst. After procedure patients improved dramatically clinically. Repeat CSF study also showed improvement and patient discharged with good clinical outcome with diagnosis as Aseptic meningitis secondary to atypical epidermoid cyst.

Discussion

Meningitis is an Inflammation of the meninges enveloping the brain and the spinal cord. Aseptic meningitis defined as meningitis with normal CSF glucose, normal to elevated protein and elevated cell count with a lymphocyte predominance & nonbacterial meningitis with negative bacterial culture. An epidermoid cyst is typically a benign brain tumor that arises from abnormal cells being left in the nervous system during development. Ectodermal cells that normally form skin are trapped in the developing nervous system, creating a cyst which is lined inside with ectodermal cells. Intracranial epidermoid cysts are congenital inclusion cysts. Epidermoid cysts comprise 0.2%-1.8% of primary intracranial tumors and are four to nine times as common as dermoid cysts[1,5]. The most common location for epidermoid cysts is the cerebellopontine angle cistern (40%-50%), where they are the third most common overall cerebellopontine angle cistern–internal auditory canal mass (after acoustic schwannoma and meningioma). Epidermoid cysts also occur in the fourth ventricle (17%) and the sellar and/or parasellar regions (10%-15%). Less common locations include the cerebral hemispheres or brainstem. Ten percent of epidermoid cysts are extradural, located in the skull or spine. All are located off the midline[1,2]. Most are asymptomatic but may occasionally result in mass effect, cranial neuropathy, or seizure[2]. Occasionally, epidermoid cysts rupture and may excite a granulomatous meningitis[3,4]. The presentation and clinical symptoms of these tumors vary depending on size and location. In the CP angle, they tend to cause headache, double vision (diplopia), gait disturbances, and/or facial pain or numbness. These symptoms and others will vary from patient to patient. In the case of epidermoid cyst, the appearance on MRI is fairly characteristic. However, they can appear very similar to another type of mass called an arachnoid cyst. Some special MRI sequences (a diffusion weighted image or DWI) can help to distinguish these two diagnoses. Definitive diagnosis generally does require tumor tissue however. As with all tumors of the central nervous system, treatment decisions vary greatly depending on the patient and the specifics of each case. However, generally, epidermoid cysts that are causing symptoms are generally recommended to be treated. Treatment usually consists of a surgical resection of the tumor. The goal is total removal of the tumor but due to their cystic nature, they can be difficult to remove in their entirety, particularly if parts of the cyst wall are adherent to important structures such as nerves or the brainstem. While these are generally benign tumors, they can continue to enlarge slowly and recur after surgery if any of the cyst wall was not removed. The appearances of unoperated epidermoid cysts are widely reported: they are usually lesions displaying a hypointense signal on T1-weighted sequences and a heterogeneous hyperintense signal on T2-weighted sequences. They

may very occasionally vary from this rule, showing reversed signal intensities to the above, a so-called "white epidermoid."[6]

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CASE REPORT

MRI Findings In A Case Of Acute Hyperammonemic Encephalopathy

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ABSTRACT

26yr old male presented with fever and altered sensorium. His CSF examination was normal. MRI brain study in this patient showed characteristic features of acute hyperammonemic encephalopathy that is typical involvement of cingulate gyrus and insular cortex with sparing of perirolandic region and occipital cortices[1]. Raised serum ammonia levels and liver parenchymal disease on abdominal sonography corroborated to the diagnosis. Typical features on MRI brain study lead to early diagnosis of this patient.

Thus knowledge of MRI findings of acute hyperammonemic encephalopathy can influence the treatment and neurological outcome in these patients.

Introduction

Hyperammonemic encephalopathy is a type of metabolic encephalopathy with diversified etiology. It is the end result of several metabolic disorders such as congenital deficiencies of urea cycle enzymes, hepatic encephalopathy, Reyes syndrome and other toxic encephalopathies[1]. Patients with acute hyperammonemic encephalopathy present with progressive drowsiness, seizures and coma[2] . Prompt recognition and treatment of hyperammonemia is therefore essential to avoid complications such as cerebral edema and brain herniation, which can prove fatal.[3]

Non specific clinical presentation poses a great challenge in early diagnosis of this entity. Irrespective of underlying etiology, hyperammonemia causes a distinctive pattern of brain parenchymal injury[4]. Thus radiologists can help in early diagnosis of this entity when it is not clinically suspected.

CASE DETAILS:

- 26 yr old alcoholic presented with altered sensorium.
- History of acute alcoholic binge prior to the onset of symptoms was present.
- History of fever was also present.

On examination he was unconscious responding only to deep pain stimulus.

Investigations-

- CT contrast study of the brain was normal.
- CSF study was within normal limits.
- USG abdomen showed findings s/o liver parenchymal disease.
- Liver enzymes were slightly deranged.
- Retrospectively done serum ammonia level was raised (310micromol/L).

MRI findings:

There was diffuse areas of altered signal abnormality involving the cortex of bilateral cerebral hemispheres. These areas showed restricted diffusion on DWI images appearing hyperintense on T2W and FLAIR images. There is typical involvement of cingulate gyrus and insular cortex with sparing of perirolandic region and occipital cortices. These areas did not show any enhancement on post contrast study. There was effacement of sulcal spaces and sylvian fissures s/o generalised cerebral edema.

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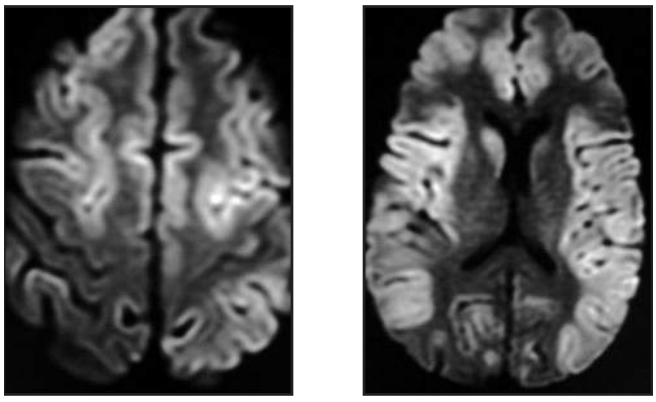
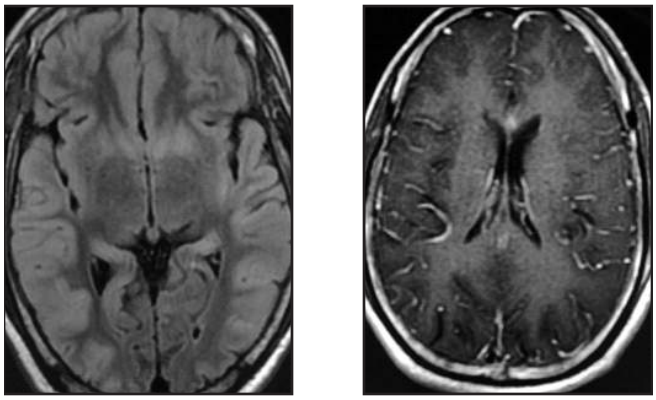


a b

DW Images- a- Showing multiple areas of restricted diffusion with **sparing of perirolandic region**.

b- diffuse involvement of cortex with **involvement of cingulate gyrus and sparing of occipital regions.**



c d

c - FLAIR images showing diffuse hyperintense signal involving bilateral cerebral cortices with minimal **sparing of occipital regions**. **Involvement of insular cortex is noted.** Effacement of sulcal spaces is also noted.

d- T1W post contrast images showing no abnormal parenchymal / meningeal enhancement.

Discussion

In this case the history of fever mislead the diagnosis towards infective etiology initially. But the normal CSF study and CT brain study showing no obvious meningeal enhancement prompted the physician to send the patient for MRI study of the brain. MRI brain findings in this patient were typical of acute hyperammonemic encephalopathy. Raised ammonia levels confirmed the diagnosis. Patient being alcoholic and USG abdomen showing liver parenchymal disease also corroborated to the diagnosis.

Hyperammonemic encephalopathy is a type of metabolic encephalopathy with diversified etiology. In this case underlying liver parenchymal disease lead to hyperammonemia. Previously reported cases have shown that cortical lesions seen on MR studies may resolve completely or they may result in mild atrophy in the cingulate gyrus or insular cortex. This indicates that early changes are reversible and suggest that early treatment minimizes or completely prevents the neurological sequelae. [3]

Conclusion

Knowledge of MRI findings in hyperammonemic encephalopathy may help in early diagnosis and treatment and could influence the neurological outcome.

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CASE REPORT

Gitelman's Syndrome Presenting as Tetany

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ABSTRACT

Gitelman' syndrome, a relatively frequent cause of hypokalemia in adults, is rarely diagnosed correctly. It is frequently confused with overt diuretic abuse or Bartter's syndrome. We describe a 48 years man with history of tetany attributed to hypocalcemia. Investigations revealed hypokalemia, metabolic alkalosis, hypocalciuria, and hypomagnesemia a tetrad diagnostic of Gitelman's syndrome & also hyperreninemia with normal blood pressure. He was discharged on potassium and magnesium supplements along with potassium sparing diuretics

Introduction

Gitelman's syndrome ('hypocalciuric variant of Bartter's syndrome (BS)') discovered in 1966 by Gitelman, Grahamand Welt is an autosomal recessive disorder involving mutation of thiazide sensitive Na-Cl transporter. Most of the cases involve mutations in solute carrier family 12, member 3 gene, SLC12A3[1]. There are few reports on this inherited disorder as a cause of hypokalemia & hypomagnesemia. This diagnostic possibility is not customarily considered as many of the pathophysiological manifestations of Gitelman's Syndrome are mimicked by the administration of thiazide diuretics[3]. In the majority of cases, it is diagnosed during adolescence and adulthood. Clinically characterised by tetanic episodes, muscle cramps, paralysis, tingling numbness, perioral tingling, salt craving and nocturia[4] . Biochemically characterized by hypokalemic metabolic alkalosis, hypomagnesemia and hypocalciuria. As reported by Cruz el al., approximately 6% of Gitelman's syndrome patients present with hypokalemic paralysis.[4] In fact, Gitelman's syndrome patients presenting with profound hypokalemic paralysis have been reported increasingly in Asia.[5,6] We describe a 48 year old female patient admitted with generalized weakness, tingling of both hands, perioral tingling, carpopedal spasm, hypocalcemia, hypokalemia with metabolic alkalosis. After extensive metabolic investigations a diagnosis of Gitelman's syndrome was arrived at.

Case Report

A 48 years old female presented with generalised weakness since 1 month , tingling of both hands & perioral tingling since 3 wks & behavioural problems like irrelevant talk, minimal confusion since 10 days. She had not persistent vomiting or loose motions, had not been on diuretic therapy or NSAIDS, anticonvulsants and was not hypertensive nor diabetic. She denied history of polyphagia, seizures, visual problem, focal neurodeficit, involuntary movements, hematuria, oral ulcers, photosensitivity, joint pains or thyroid surgery. Patient was operated for acalculous cholecystitis 5 months back. Biopsy specimen s/o chronic acalculous cholecystitis & tuberculosis of omentum for which AKT CAT 1 was started. Patient was postmenopausal with no similar complaints in the family. On examination the patient was conscious, oriented, obeying verbal commands, BMI = 20.44, Carpopedal spasm+, Afebrile, PR - 78/min, BP - 100/60 mm Hg, Pallor+, No signs of connective tissue disorders, No skeletal or dental abnormalities or cataract. Neurological examination revealed brisk deep tendon reflexes with sensory motor deficit. Cardiovascular and respiratory system were normal.

ECG showed U waves. Hb was 9.0 g, TLC, RFTs, LFTs, BSL, TFTs, serum uric acid was normal. ANA and ds DNA = negative, CXR was normal. Renal size on USG was RT Kidney= 10.3*4.7 cm, LT Kidney= 9.3*4.1cm. CT abdomen (p+c), both

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adrenals normal. Other investigations done are shown in table 1-5

Table 1 - ABG"S : over a period of 2 days

ABG	Day 1	Day 2
pH	7.57	7.59
Hco3(meq/L)	42.1	45.3
Pco2(mmHg)	48	46
Po2(mmHg)	90.2	93
Sao2	98	97
Interpretation	**Metabolic alkalosis with respiratory compensation**	

Table 2 - Investigations :

Lab	Pts value	Normal range
Serum Sodium(mEq /L)	126	135-145
Serum potasium (mEq /L)	1.7	3.6-5.1
Serum Chloride(mEq /L)	92	95-107
Serum calcium(mg%)	6.5	9-11
Serum magnesium(mg%)	1.2	1.7-2.7
Serum phosphate(mg%)	1.5	9-11
Serum PTH(pg/ml)	60	14-72
Serum 1,25$(OH)_2$D (pg/mL)	14.6	7.7-46
Plasma osmolality (mosm/kg)	256	295
Plasma rennin activity(ng/ml/hr in supine position)	6.33	0.5-1.9
Serum aldosterone(pg/mlin supine position)	113.77	10-105
Serum Cortisol(microg%)	17.9	6.2-19.4
Interpretation	**Hypokalemia,hypocalcemia,hypomagnesemia , hyperaldosteronism, hyperreninemia**	

Table 3 - Investigations :

Lab	Pts value	Normal range
Urine PH	7.00	5-9
Urine specific gravity	1.010	1.001 – 1.035
Urine proteins (mg /day)	trace	0-30
Urine RBCs /hpf	0	0-2
Urine Pus cells /hpf	0	0-2
Urine for eosinophils	0	0
Urine osmolality(mosm/l)	525	275-295
24hr urinary proteins(mg/day)	28	< 30
Interpretation	**High osmolality**	

Table 4- Investigations :

Lab	Pts value	Normal range
24 hr urinary Ca++ (mg/dl)	37.8	50 -300
24hr U. Mg++(mg/day)	24.20	24-255
24hr U. Cl- (mmol/day)	253.40	adult : 110-250
24 hr U. Na+(meq/day)	220.40	40-220
24hr U. K+(mmol/day)	21.28	25-255
Interpretation	**Hypocalciuria**	

Table 5- Investigations : Electrolytes ABG over next ten days

Investigation	Day 1	Day 3	Day5	Day 10
Serum Na(mEq /L)	126	121	130	139
Serum K+(mEq /L)	1.7	1.9	2.3	3.1
Serum Cl^-(mEq /L)	90	92	89	92
Serum Ca++(mg%)	6.5	7.2	9.2	9.0
Serum phosphate(mg%)	1.5	1.6	1.8	2.3
Serum magnesium(mg%)	1.3	1.2	1.8	2.1
pH	7.57	7.5	7.42	7.32
Hco3	42.1	45.2	28.0	26.0
Pco2	48	47	27.0	24.0

Discussion

Gitelman's syndrome, also referred as familial hypokalemia- hypomagnesemia, is an autosomal recessive salt-losingrenal tubulopathy that is characterized by hypomagnesemia, hypocalciuria and secondary aldosteronism, which is responsible for hypokalemia and metabolic alkalosis.[1] In majority of cases, it is caused by mutations in the solute carrier family 12, member3, SLC12A3, which encodes the renal thiazide sensitive sodium chloride co-transporter that is specifically expressed in the apical membrane of cells in the first part of the distal convoluted tubule. The reduced sodium reabsorption in distal convoluted tubule leads to volume depletion and hypokalemia. Hypocalciuria occurs due to loss of activity of thiazide sensitive transporter which increases tubular reabsorption. It is distinguished from its variant named Bartter's syndrome by hypomagnesemia and hypocalciuria.[6] Moreover it has a latter age of presentation- usually in or beyond adolescence. Prostaglandin excretion is normal and plasma renin activity along with plasma aldosterone concentration are only slightly elevated as compared to Bartter's syndrome. In contrast to BS, GS is a mild disease[6]. These patients are not volume depleted clinically, and polyuria and polydipsia are absent because the urinary concentration ability is intact or only slightly impaired. The usual presentation is with weakness, tetany and paresthesias. However majority of patients are asymptomatic and all of them have normal blood pressure. Our patient also presented with generalized weakness, fatigue, paresthesias and normal blood pressure. Affected patients sometimes have a history of tetanic episodes, *carpopedal spasms or seizures*. This typically occurs when the serum magnesium is further decreasing, e.g. during episodes of vomiting, diarrhea or fever. Nevertheless, hypocalcemia is seen in up to one third of hypomagnesemic patients and is explained by impaired release of PTH and/or resistance to its peripheral action[6]. In our patient, detailed laboratory evaluation revealed hypokalemia, hypomagnesemia, hypocalciuria along with metabolic alkalosis. Moreover the plasma renin activity and plasma aldosterone levels were mildly raised. Inspite of high aldosterone levels our patient had hyponatremia due to salt wasting tubulopathy. Our patient denied abuse of any drug and there was no history of vomiting. She denied further

investigation. Hence mutational study could not be done. We did not subject our patient to renal biopsy as hyperplasia of the juxtaglomerular apparatus may occur with hyperreninemia of any cause[7]. In view of clinical examination and laboratory evaluation she was diagnosed to be having Gitelman's syndrome. Potassium and magnesium supplements are used along with potassium sparing diuretics.[4] Our patient was started on intravenous potassium and magnesium supplements and subsequently she was discharged on oral potassium and magnesium supplements along with spironolactone & dietary advice to include coconut water & citrus juices. She had normal electrolyte panel report on discharge. After three months of follow up patient was totally asymptomatic &we repeated the electrolyte panel which was normal. Her 24 hours urine was investigated for calcium, magnesium, potassium which were 49.80 mg/day, 25.00 mg/24 hrs, 23.8 mmol/day respectively. Patient was also counselled regarding the importance of regular follow up.

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