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Universal Health Care, A Universal Human Right

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Indian government has progressively relied on private health care organisations to provide health care for most of the population. In contrast, in UK, majority of health care is provided by National Health Service (NHS), which is funded by central taxation and is free at the site of delivery. UK is one of the fifty odd countries, which provide guaranteed 'Universal Health care' (UHC).

To illustrate the contrast in the system, I am going to give an example of one of my patients in UK. Anthony (name changed) is a 28-year-old carpenter. Unfortunately, a few years ago, he had acute viral myocarditis and subsequent resistant heart failure. His ejection fraction was about 10% and we referred him to Papworth hospital, a well-known tertiary care centre, for consideration of heart transplant.

Anthony was flown with ionotropic support in our hospital's air ambulance to Papworth. He went on the emergency heart transplant list. Luckily, after a few weeks, he did have a match and underwent successful heart transplant. After a stormy postoperative period, he made fair recovery and but wasn't well enough to work full time for several months. He was off sick for almost a year.

Anthony continued to get full pay for all this period because of a government insurance scheme. All his treatment was completely free. He or his family did not get affected financially in any way. My estimate is that NHS spent more than Rs 2 crores on his care.

Supposing Anthony happened to be either “Amar” or “Akbar”, a person born a middle-class family in India or Afghanistan; and needed a heart transplant, it would have been a different story.

Even though heart transplants are now done in India, they are available only in a select few institutes in big cities. These centres are mostly private hospitals and available to a minority of well-off section of the society. I understand that the cost of heart transplant can be as high as Rs 50 lacs, which many citizens simply can't dream of spending.

Most of the modern high-quality health care interventions are very expensive. Here is the difference between India and UK. In India such care is a privilege of a few rather than a right for all. It's based on one's capacity to pay, rather than fairness or social justice, the fourth principle of modern day medical ethics. In contrast, in UK such interventions are available to everyone without any extra financial burden.

Majority of our citizens cannot even afford basic health care, forget about heart transplant! Excellent institutes like SGH do not even offer free or subsidised long-term dialysis programs. How can a common man survive should he/she get end stage renal disease? A recent study showed that 60% of patients who need hospitalisation have to borrow money to pay hospital bills.

Mind you it's not just developing countries. Even in a very rich country like USA, one can not get expensive treatment unless one has good insurance. About 10% of USA population do not have insurance cover and can be in real trouble in case of hospitalisation.

So why is that some countries offer free UHC and some don't? It's not just money, but a social attitude based on compassion. Relatively less well-off countries like Cuba and Indonesia have UHC and well-off country like USA doesn't.

Some societies have socially more evolved, are more compassionate and accept health care as one of the human rights. In such societies the poorest of the poor has the same rights to basic needs like food, shelter, minimum standard of living and free health care. No one is allowed to suffer because of lack of the basic needs.

Unfortunately, there are always exception to any rule. For example, some drug addicts become homeless as they spend all their benefits on recreational agent rather than paying the subsidised house rent. Currently in UK, there are about 4000 homeless people. Massive efforts have been made by social care agencies to solve this issue, but they haven't been successful for multiple complex reasons.

Concept of health care being a human right is relatively new. History of human rights evolution is fascinating. As pre-historic human societies became organised, a degree of hierarchy based on 'hominid alpha male dominance' evolved. The only rule was 'might is right'. The alpha male or the top man (and his henchmen) had all the rights and poor down-trodden had to rely on pure luck and goodwill to survive.

Two and a half millennia ago, in some Greek city states, concept of democracy originated. However, it was a very restricted democracy where only some upper-class men were allowed to vote.

The next big leap in advancement of human rights occurred in 1088AD, when the English king William started 'Doomsday Book' project. Every dwelling, agricultural land and woodlands in the country were listed. A registry was created to note down the rightful owners.

For the first time in history, one of the most powerful kings recognised that citizens had the rights to own a property and it could not be simply taken away by any other citizen or even the king.

The next important step in the advancement of human rights took place once again in England in 1215AD, when king John declared rights of liberty for all citizens by publishing MAGNA CARTA. The concept of "Habeas corpus" was introduced. Police could not indefinitely detain any one. In a certain time frame the arrested person had to be brought to a court and the detention justified in front of an independent judge. Even after 800 years all democratic societies follow principles laid in Magna Carta.

In 1590 AD Queen Elizabeth introduced "Poor's' law". The law made sure that the genuinely poor person who could not work because of age or disability would get food and housing from the government. This law continued for next two centuries and then evolved further. In UK it is the responsibility of the department of health and social welfare to ensure basic minimum living standards and uniform health care for all citizens.

The next huge leap in human rights was abolition of slavery in various countries in the 19th century. Interesting that the male ex-slave got voting rights straight away, but women even from the upper ruling classes still were considered inferior and "not capable of voting".

Almost 2400 years after birth of Greek democracy, New Zealand was the first country to grant voting rights to women in 1893! Over next few decades most democracies became mature enough to recognise that women should have the same rights as men. Now of course we know that women are superior to men in most aspects .

Sad to say even today, there are many countries in world where women are officially 'second-class' citizen and not even allowed to drive or watch football matches! As I write this article, I am happy to note that Saudi Arabia has recently started allowing women to drive! Some victory!

Coming back to health care, in late 19th century, in Germany, some private businesses and later state government started social insurance schemes. The aim was to minimise the risk of an individual. in case of an adverse health event or untimely death. The concept spread widely in the Western Europe.

In 1911, UK government introduced National Health Insurance act, where by every citizen was insured for primary care, unemployment, sickness and death benefits. For this a separate additional tax (national insurance contribution) was introduced. Like any taxation, there are exemptions at lower income level. Students, unemployed and retired citizens do not pay any national insurance.

In 1948 the coverage was extended and the National Health System (NHS) was born. Apart from the above-mentioned benefits, secondary and tertiary care was also made available to all citizens.

The year 1948, will also be remembered for Universal declaration of human rights (UDHR) by a specially set United Nations commission. The rights have evolved over last 7 decades but basic principles remain the same. The declaration sets an aim that all citizens of the world should have guaranteed rights for leading a free, dignified and secure life despite of their nationality, colour, race, religion, caste, sex, sexual orientation.

The details of the act are beyond the scope of this article. UN commission has been unsuccessfully aiming to declare universal health care benefit as a human right, thanks to objections from powerful right-wing groups especially in the USA, who feel that government has no

right to interfere in personal health care choices.

Contrary to such right-wing convictions, there is an over whelming evidence to show clear benefits of UHC in term of enhancing both quality and quantity of life. I remain optimistic that sooner rather than later, all over the world, citizens and politicians will realise the importance of UHC and it will become an official United Nations recognised human right.

Indian government is taking a few steps in the right direction, but there is a very long and difficult road ahead. Government health care spending has to go up from a miserly 1.2% of GDP to at least 5% (to compare, most developed nations spend 10% and above).

As medical professionals we should make it our mission to educate population about UHC and pressurise government to gradually expand the subsidised health care system with an aim of eventually achieving UHC for every Indian citizen. We must firmly believe in the principle "Universal health care is a universal human right".

As one of the greatest visionary leader of 20th century, Nelson Mandela said, "after climbing a hill, one only finds that there are many more hills to climb". UHC in various nations has had troubles in initiation and maintaining consistent good quality care. However, there are tried and tested fairly successful models available for us to choose from. We can learn from others and avoid their mistakes. We must not get bogged down by the sheer enormity of task. We must take small steps at a time and be ready for corrections.

I end this article with one more Mandela quote, "It always seems impossible until its done!"

REVIEW ARTICLE

Snake Bite Poisoning: Clinical Manifestations And Treatment At Rural Setting

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Envenoming by poisonous animals (snakes, scorpions, wasps, ants and spiders) are routine accidents and occupational hazards often faced by farmers , farm laborers, hunters and shepherds of tropical and subtropical countries. More than 2000,000 snakebite are reported and estimated that > 50000 people die of snakebite each year in india, most of them are the only earning member of family. Villager's and even educated people believe that snake bite is due to curse of GOD and it has no treatment. Newly posted inexperienced doctors, inadequate facilities delays proper treatment and contributes to morbidity and mortality. Snakebite poisoning is seldom mentioned as a priority for health research in the developing country like India.

Out of more than 3000 known species of snakes over the world, only about 300 are venomous and there are about 216 species of snakes identifiable in India, of which 52 are poisonous. The major families of poisonous snakes in India are Elapid which includes common cobra (Naja naja), king cobra and common krait (Bungarus caeruleus, banded krait, Sind krait), viperidae includes Russell's viper, Echis carinatus (saw scaled or carpet viper) and pit viper and hydrophidae (sea snakes). Fatal snake bites are common in monsoon season.

Risk factors for snake bite & complications

• Bare foot walking, unprotected hand while collecting rubbles, fire wood, cattle shadesand.

• Mud house with multiple grooves or slit left between doors on floor of house. huts or villages situated at the base of hilly region where rats, lizards , krait and cobra flourished.

• Chula and remained ash in it (warmer in winter and cold in summer a pleasant environment to attract the snake like krait).

• Non-qualified untrained unskilled snake rescuer without proper instrument and knowledge. Professional snake catcher like that Yerula community sometimes due to slight negligence.

• For suicide or homicide purpose

• While handling and milking snake for venom in laboratory for preparation of antivenom.

• Sleeping on floor bed without mosquito net.

• Bathroom drainage without net.

• Attempts to kill the snake or hold the killed snake

• Neglecting the premonitory signs and symptoms by relatives and inexperienced doctor (Pain in abdomen, minimum or absence of local signs) particularly in krait bite

• Non availability of ASV, ventilators. Emergency attention, treatment and experienced advice.

• Routine use of open toilet

• Growing tress and its branches entering through the window through which snake entered in house

Government should provide all facilities including anti-snake venom (ASV), and emergency treatment including ventilators rather than giving one lack rupees to relative of patient died of snake bite. Routine training, teaching and awareness programs may alleviate the morbidity and mortality.

Biochemistry, physiology and pathology of envenoming

Snakes are cold blooded, highly specialized animals. A pair of salivary glands secrete a powerful multipurpose enzyme fluid (venom) that flow at the time of envenoming through fine channeled or grooved teeth called fangs. It is quite clear that snake venom is not a substance evolved to attack. Snake can bite and continue

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to secrete venom a number of times. Dark snakes skin is poor conductor of heat, they secrete more venom, mainly in fluid form, While light colour skin is good conductor result in decrease body temperature, venom is in viscous form. Most snakes injects 10% of the available venom in single strike, except the Russell's viper, injects 75% of stored venom in one bite due to big long sharp curved fangs.

Snake Venom is a cocktail of 20 or more components including proteins , enzymes, non-enzymatic polypeptide toxins, nerve growth factors, hyaluronidase, metals, lipids, free amino acids, nucleotides carbohydrates, biogenic amines, metalloproteinase, haemorrhagine 1 and2, and various activators and inactivators of physiological system.

Krait and cobra venom contains acetylcholine esterase, phospholipase B and glycerophosphatase

Phospholipase A2 is found in majority of venom . It destroys mitochondria, blood cells, peripheral nerve , skeletal muscles, vascular endothelium, pre-synaptic nerves. Also have opiate like sedative effects and release of histamine (anaphylaxis). Hyaluronidase promotes the spread of venom through the tissue. Proteolytic enzymes leads to local changes in permeability leading to edema, blistering, bruising and local necrosis.

Cobra venom is postsynaptic neurotoxins i.e. alpha-bungarotoxin and cobratoxin. Severe, irreparable local tissue lost at the bite site of cobra due to myocytolysis. Acetyl choline receptors are primary signal transducers at neuromuscular junction. Cobra venom binds specially to acetyl choline receptors, prevent the interaction between acetyl choline and receptors on postsynaptic membrane result in neuromuscular blockade. Cardiotoxin in cobra venom has direct action on skeletal, cardiac, smooth muscles, nerves and neuromuscular junction causes paralysis, circulatory, respiratory failure, cardiac arrhythmias, various heart blocks and systolic cardiac arrest. Cobra venom is of smaller molecular size and rapidly absorbed in to circulation. Absorption is further accelerated by threat of death , liberated catecholamine and physical activity can kill the victim within 8 minutes. Common Indian Krait (bungarus caereleus) venom contains both beta bungarotoxin and Alfa – bungarotoxin. These toxins initially release acetyl-choline at the nerve endings at neuromuscular junction and then damage it, subsequently prevent the release of acetyl choline and as receptors are damage and destroyed because of resistance to anti-cholinesterase. Initial release of acetyl choline result in autonomic nerve stimulation in addition to release of cholecystokinin explained the acute abdominal pain, vomiting , staring look, blurring of vision, gooseflesh, salivation , hypertension due to (released postsynaptic adrenaline) , pulmonary edema. Envenoming by krait is associated with a syndrome of neuromuscular paralysis that falls in to three distinct phases. The first phase is rapid onset phase leading to profound paralysis within 30-60 minutes. The second phase is stable phase of deep paralysis lasting 2-3 days. The third phase is a recovery phase 2-3 weeks. This explains the prolonged period of ventilators support and intensive care requirements essential for recovery.

Krait venom is ten times more lethal than cobra. Krait is a nocturnal in habit. Its fangs are small size like that of 24 size needle. It injects the venom in to deep skin . Though venom is of small molecular size. It is absorbed slowly. Beta bungarotoxin in the krait venom bears similarity to botulinum toxin.

Viper venom interferes with blood clotting. Venoms contains serine proteases , metaloproteinases, C- type lecithin's , disintegrins and phospholipases , it exhibits both anti-coagulant and coagulant effects on blood clotting mechanism resulting in defibrination syndrome or disseminated intravascular fibrino- coagulopathy. The acute bleeding is due to hypofibrinogenaemia due to massive consumption of fibrinogen and fibrinolysis of blood clots..

Russell's venom is a rich source of enzymes that activates factor x to convert prothrombin to thrombin in presence of calcium factor V and platelets thus Russell's venom contains several different “pro-coagulants” which activate different steps in the clotting cascade. The fibrinolytic activity of the viper venom is so fast that sometimes within 30 minutes of the bite, the coagulation factors are so depleted that blood does not clot. Acute renal failure due to viper bite is attributed to hypotension due to raised circulating bradykinin, hypovolumia due to blood loss either by external or internal bleed accumulation. Tubular blockade by free haemoglobulin , myoglobulin , hypo- hyperkalemia, tubular damage , interstitial nephritis. A protein in the Echis carinatus (saw scaled viper) seen all over India

except Bengal and Kashmir

has the unique effects of enhancing fibrinolysis by plasminogen activation by urokinase. Haemorrhagins - 1 , 2 and metaloendopeptidase causes acute rapid bleeding in brain , lungs, kidney, heart and GI tract. It causes severe vasoconstriction followed by vasodilatation of the micro-vessels. Endothelial gaps due to disintegration of the endothelial cells within intracellular edema, swollen mitochondria, dilated endoplasmic reticulum and separation of intracellular junction of the endothelial cells. Local loss of basement membrane of the vessels leading to capillary leaking syndrome.

Clinical manifestations

Common Indian krait (Bungarus Caeruleus)

Local names –Kala gandait, kala taro, kandar, manyar, chitti, kattu viriyan , valla pamboo.

Krait is 1 to 4 feet long with enlarged hexagonal vertebral scales, uniform white or red belly and narrow white crossbars on the back, more or less distinctly in pairs; the crossbars are typically absent near the head and neck region. The common krait resides in the vicinity of human habitation, near the wattle and daub, mud and small hut in Kashmir and Adivasi dwelling. Krait is nocturnal, snake that enters human dwellings in search of prey such as rats, mice and lizards. It eats even the small snakes (cannibalism). The common krait is regarded as the most dangerous species of venomous snake in Indian subcontinent. Most bite occur during months of June to December, during the course of hunting activity .

Banded krait its head is slightly broader than neck, tail is short and round tip. Body is covered with equally spaced wide, yellow /pale brown /white and black bands often a non- aggressive. It lives in termite mounds and rodent burrow close to water. Though it is much active during night, but more reluctant to bite than common krait. It is seen west Bengal, Assam, Bihar, Orissa Madhya Pradesh, Andhra Pradesh.

Majority of krait bite cases are reported between 11pm 5AM. Victim might experience mild pain at the site of bite, parasthesia or numbness, without any local marks or swelling or bleed. In such situation one can extensively search for small fangs marks with minimum surrounding urticaria allover body particularly over back, axial, neck, popliteal fossa. Because of very less or absent of local manifestations, envenomation is neglected and falsely initially attributed to ant or rat bite or no bite at all. Mild pain , parasthesias or heaviness in bitten part. The venom stimulates autonomic nervous system thus victim woke up within 20-30 minutes of bite, due to transient abdominal colicky pain,vomiting, chest pain. Relatives and even a inexperience doctors neglect these vital symptoms by attributing to GIT problem but minimum T wave inversion secondary due to hypoxia such victim should referred to intensive coronary care unit. Clinical examination may reveled brady-cardia, sweating , raised blood pressure, pulmonary edema , starring look , blurring of vision or at times photophobia. Krait venom has a great affinity towards pre-synaptic acetyl choline receptors. Thus the tissue having high concentration of this receptors such as sphincter pupillae , elevator palpebral superior, neck muscle , bulbar and subsequently limbs and last the diaphragm and intercostals muscles.

Bilateral ptosis, pooling of saliva, difficult to protrude the tongue beyond teeth margin, slurred or nasal twang speech, aphasia dysphagia, dysponea, external opthalmoplegia, weakness of neck muscle , respiratory muscle and lastly the diaphragm. Patient complaints of blurred vision, double vision, respiratory paralysis , coma, and anoxic cardiac arrest. Venom induced paralysis of pupillary muscle resulted in to non-reaction pupils. After recovery few patient had signs and symptoms of peripheral neuropathy. Many times patients succumb to iatrogenic respiratory infection or adult respiratory distress syndrome with mainly descending neuroparalysis .

Many times victim bitten by krait did not develop any clinical manifestations, local fangs marks without urticarial indicated bite without envenoming or “Dry bite”.

To confirm or identify the venomous krait is look at the tail which is covered by white bands till its end. Which is absent in wolf a non venomous snake which apparently look like krait

Management of krait bite

First aids – At home or place were bite occur. If one successes to locate the bite site. clean the surface deposited by venom with clean cloth or cotton. Keep the bitten part below heart level. Apply Crepe bandage from

distal end of bite site with a pressure equal to that one can easy put and remove the finger underneath the bandage. If victim should bring to hospital within 2 hours . One should not waste the time in searching of snake. If snake is killed take it to hospital, may help to doctor for diagnosis. Victim is not allowed to walk. Victim should be given a middle sit over the bike.

At hospital- patient should be examined in ventilated room. Ask the patient where is the site of snake bite. Details of history, activity at the time of bite. Initial clinical signs should be noted in detail with time such as bulbar palsy, muscle power, tendon reflexes, respiratory rate, oxygen saturation, pooling of saliva, broken neck sign. Blood pressure and ECG changes. Serum electrolytes and renal profile and these signs to be closely monitored every hour till clinical improvement

Anti-snake venom (ASV) - Read details of referred letter regarding initial dose of ASV. On arrival 100ml (10 vial) ASV to be added to 200 cc of normal saline & run over 30-50 minutes. One should sit by the side of victim for early diagnosis and treatment of anaphylaxis. Within 30minute after initial dose of ASV if there is no improvement of neurological manifestations one can repeat dose of ASV but not more than total 20 vials of ASV to be administered. ASV neutralizes circulating venom and it has no action once the venom is attached to the receptor site. In krait bite there is destruction of receptors thus neurological manifestation may persistent for weeks till there is regeneration of receptors. At this stage administration of ASV is merely a waste.

Ventilation – Indications are if victim has pooling of saliva, unable to lift the neck from pillow, reduction in SP02(<90%) saturation, respiratory failure, abdominal-thoracic respiration. Suffocation and signs of cerebral hypoxia. At periphery one can do entrotracheal intubation, if not possible a laryngeal mask can be put directly over larynx and amboo bag ventilation. At home one can start mouth to mouth ventilation. As there is rarely a total paralysis of respiration in such situation victim should be put on support mode ventilation.

Anticholine esterase inhibitor (AChEI) – Indian common krait venom content both pre and post synaptic blocker. Whether victim response to AChEI or not can be confirm by putting ice filed glove finger over eyelid. Hypothermia sensitizes the Ach receptors of acetyl choline. If there is slight improvement in ptosis can try AChEI . Calcium gluconate every 6 hourly may improve the neuromuscular conduction.

Severe uncontrolled hypertension in krait bite is attributed to blocked presyaptic receptors & unblocked post-synaptic receptors which releases epinephrine in circulation

Severe hypertension with tachycardia with pulmonary edema can be trated with nitroglycerine drip and non-invasive ventilation

Cobra

Cobra bite tends to occur during day time, when the transportation is more readily available. Cobra bite is often reported when a person is going for open toilet or bathroom during night hours.

Soon after bite victim experiences severe pain at bite site having a fangs marks,covered with blood clots. There is rapid progression of swelling from bitten part to rest of limb. Skin at and around the bite site is ecchymosed. Subsequently develope tense blebs and massive damage of skin and subcutaneous tissue due to myocytolysis and huge non-healing ulcers. If the victim saw the bitten hooded cobra, may die of cardiac lethal ventricular arrhythmias or Later may developed stress induced or ballooning cardiomypathy. As a result of massive liberation of endogenous catecholamine in to circulation due to threat of death feeling (this phenomenon is absent in children having no ideas of death). Sinus bradycardia, A-V block and hypotension may see due to cardio-depressant action of venom. Sudden respiratory arrest without any other neurological manifestations can occur resulting in anoxic cardiac arrest. Rapid ptosis and bulbar palsy accompanied with respiratory depression occurred. Rarely hematotoxic effects are seen. Blurring of vision and loss of accommodation is earliest sign of envenoming.

Management of cobra bite

Victim is not allowed to walk or run, bitten part is kept below heart level. No time should be wasted in tourniquet. If patient found totally unconscious with no respiration, mouth to mouth ventilation and chest compression may start. Transfer the victim by available vehicle or over back of healthy person to hospital.

At primary health center ASV 100ml (10 vials) by intravenous route maximum 20-25 vials. Artificial ventilation by amboo bag or ventilator. Venom is

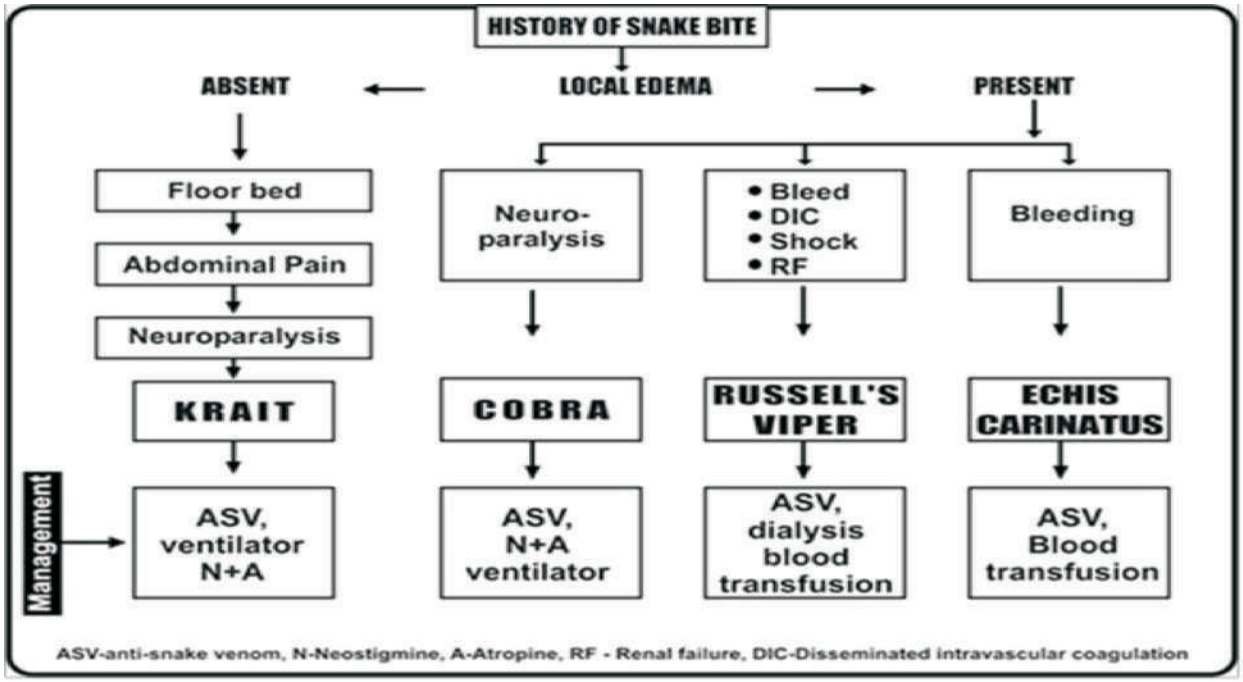
Victim carried in bamboo basket. Only transport available during night hours in hilly region

Lose fire wood, dry cow dung, ash in Chula which is warm in winter and cold in summer a pleasant environment, wattle and daub houses, Mud house

Snake may find its way to house through the branches of garden tree

Open toilet, waiting for doctor in OPD, harvesting grass left hand goes blindly in grass more prone for snake bite, bare foot walking close to grown grass edge , patient waiting for doctor

Victim of neuroparlysis should be properly supported during transport



Flow chart for clinical diagnosis and apropriate management

Big curve, sharp fangs of Russell's viper

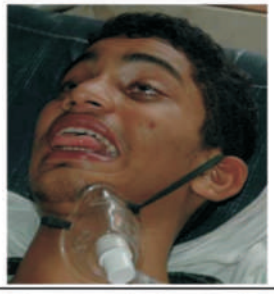
Stage 1-Within one hour of bite profound paralysis, reflexes present, planter extensor, respond to command

Stage 2- after 2 hours Deep paralysis, reflexes absent , planter can not be demonstrate , pupils dilated poorly reacting to light, don't respond to command [locked in syndrome] to confirm whether patient is conscious or deep comatose or pseudo-coma can be done by asking patient to attempt to open the eyes one can feel a slight movement of frontalis muscles because this muscle has got dual nerve supply or upward movement of both eyes because of intact middle longitunal bundle

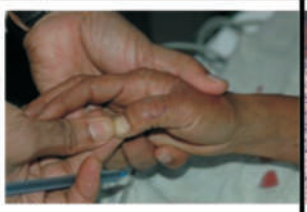
Stage 3-After 24 hours response to oral command, reflexes are present, planet is flexor

Stage 2 and 3 are shorten because of treatment

Krait *Bungarus Caeruleus*

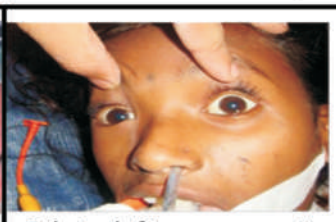


Bilateral Ptosis , bulber palsy and recovery

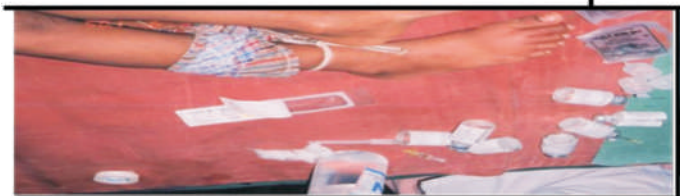


Broken neck sign, fangs marks over dorsum of thumb

Pooling of saliva a indication of intubation



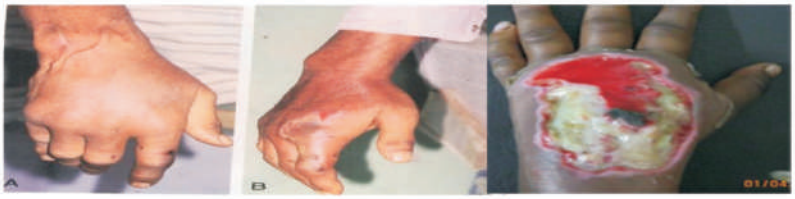
Dilated fix non reacting pupils are not due to brain death but paralysis of sphincter pupil due to receptor blocked by venom



Tourniquets should not be released unless full initial dose 100ML antivenom is administered

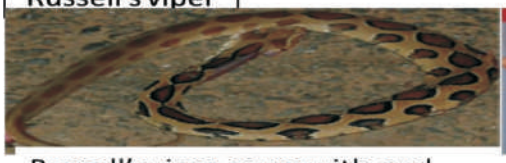
Wolf snake a non-venomous snake apparently look like krait – See the tail end is free from while bands


Cobra



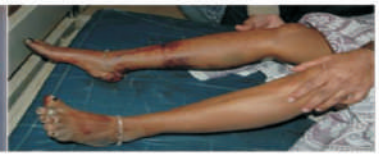
A- Cobra over index finger, B-edema with necrosis C- non healing ulcers

Russell's viper

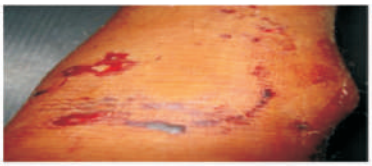


Russell's viper cover with oval spot like RUDRAKHA

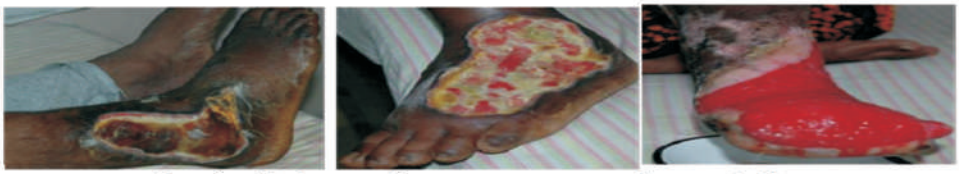
Wet gangrene at bite site



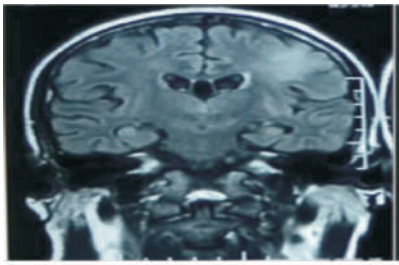
Local fangs marks and skin gangrene



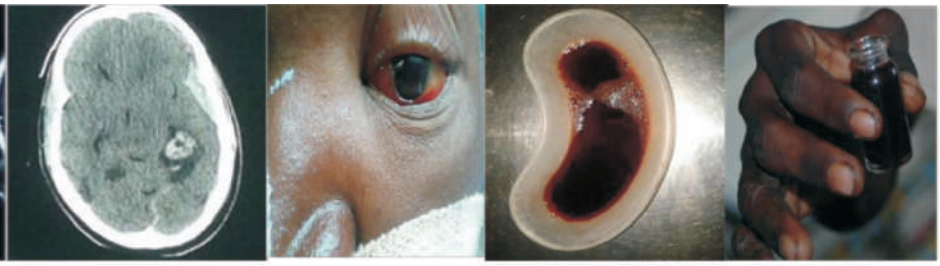
Fangs marks with active bleeding



Surgical intervention, gangrene, and amputation

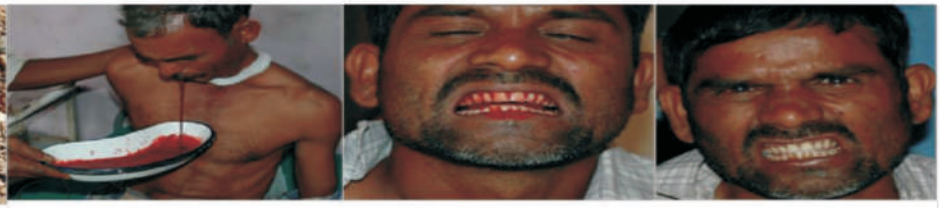


35 years male suffered of Aphasia due to left cerebral infarction after viper bite

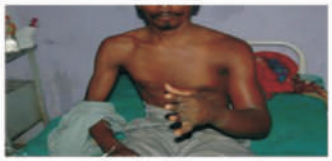


42 year male suffered of convulsions, loss of consciousness due to intracerebral bleed after Russell's viper bite , Conjunctival edema with bleeding , coffee colored blood aspirated from stomach ,

Echis Carinatus or Saw scaled viper or *Jilebi* or *Chubhal* snake



Shower of blood due to active gum bleed which reduced within 30 minute after administration of ASV

Green Pit viper Heavy triangular head and Rapid progressive edema without regional lymphadnopathy due to Green Pit viper bite

Turbid solution of ASV should be discarded

ASV reaction : Urticaria and subconjuctival bleed

reversible attached to postsynaptic receptors. Neostigmine 50 microgram kg over first hour and than 25 microgram kg next hours preceded by atropine to counter the muscarinic action of AChEI. Or 0.5 mg neostigmine half hourly precede by atropine majority of victim recovered within 24 hours. Required dose not more than 5-6 doses of AChEI.

In our experience a victim diagnosed died by peripheral doctor only by absence of respiration and non –reacting pupils was recovered with artificial ventilation, CPR and AChEI.

Local wound care is done by intravenous antibiotic, daily dressing and may require plastic surgery.

Cobra bite is common accident faced by snake catcher because of careless handling of snake.

Sea snakes

Sea snake bite cases are reported from coastal region. Fishermen accidentally handle the sea snake result in envenoming. Its venom is neurotoxic, myotoxic and haematotoxic soon after bite victim complained of headache, sweating ,vomiting tingling numbness, foreign body sensation in throat and swelling of tongue. Within 30 minutes to 3 hours after bite severe muscle pain, muscle tenderness, trismus, muscular paralysis, respiratory arrest will develop without local manifestations. Due to myotoxic effects of venom resulting in liberation of potassium in the circulation manifests in ECG tall T waves, widened QRS complexes and diastolic cardiac arrest. Massive liberation of myoglobin in to circulation, it blocks the renal tubules and acute renal shut down. Brown colored urine a diagnostic of myoglobinuria.

Management- Intravenous polyvalent ASV 100 ML. Ventilator for respiratory failure. Correction of hyperkalemia as intravenous diuretic, calcium gluconate, insulin glucose drip & dialysis. In case of resistant hyperkalemia one can try potassium channel drug oral glebemclamide provided one take care of hypoglycemia.

Russell's viper

Russell's viper inhabits 10 south Asian countries. In Pakistan, India, Sri Lanka, Bangladesh, Burma and Thailand it ranks amongst the most important causes of snakebite mortality. While protecting the paddy, wheat, containing the rodent (rats) population, it kills many farmers. It is 3-5 feet long snake. Head is covered with small scales and without shields. Body is massive, cylindrical, narrowing at both the ends. Head is flat, triangular with short snout, large gold flecked eyes with vertical pupil and large open nostrils. Round belly with constricted neck. Typical oval rows (like Rudraksha) arranged in two rows is the characteristic of Russell's viper. Its natural prey includes mice, rats, frogs, lizard , snakes and birds. Length of fangs in adult snake is 16 mm long and curved. The amount of venom injected at the time of bite is 30 to 70mg. Bite occurs while reaping or handling rice or Jawar or sugar cane husk bundles. At times snake is trodden while walking in growing grass. Snake catcher get bitten by Russell's viper through a cloth bag in which temporarily rescued snake is kept. Victim experience severe local pain at the site of bite. Rapid swelling progressed to whole limb within six to eight hours, active bleeding from the fangs marks. Within one hour there is regional lymphangitis. Rapid absorption of venom in circulation attributed to sharp long curve fangs injects maximum venom in deep muscles. Rapid development of edema muscles, accumulation fluid and bleeding with development of compartment syndrome. Subsequently development of wet gangrene or non-healing ulcer. If untreated toe or finger resulted in auto amputations. Lymph nodes proximal to the bite become enlarged and tender.

Systemic manifestations

Hypotension, shock is due to sudden liberation of bradykinin , bleeding and loss of fluid in swollen part, bleeding in to adrenal glands, pituitary or peritoneal or massive blood loss by hemetemesis or hemoptysis. Most of victims complain of pain in abdomen due to internal bleeding.

Stroke due to cerebral infarction or sub-arachnoids or intracerebral bleed or coma may result in morbidity and mortality

Haemostatic failure because of consumption coagulopathy. Once the patient's blood has become incoagulable , may lead to the spontaneous systemic bleeding including haematuria. Victims with pulmonary tuberculosis with cavity, peptic ulcer and hypertension are more prone to developed life threatening bleeding.

Russell's bite victims subsequently developed amenorrhea, Sheehan's syndrome, loss of libido due hypo-pituitarism, reported from south part of India .

Enhanced capillary permeability seen in form of plural, pericardial effusion, ascities and conjunctivae hemorrhage or congestions resistant shock syndrome (capillary leak) responsible for high fatality. Rarely parotid is involved. Conjunctival edema with hypotension suggestive leaking syndrome carries guarded prognosis.

20-40% cases subsequently developed anuria, oliguria and acute renal failure. Renal angle tenderness is most important clinical sign for early diagnosis of renal failure. There is serial rise in blood urea and serum creatinine with acidosis and hyperkalaemia with generalized anasarca. Renal failure is due to tubular damage by venom itself, hemoglobinuria, hypotension, micro thrombi in the kidney contribute to the acute tubular necrosis which is the commonest cause of death.

Ptosis, bulbar palsy, inter-nuclear opthlamoplegia and respiratory paralysis due to presynaptic neuromuscular block in a Russell's viper bite poisoning often seen and reported from kerala and Sri Lanka..

Management Russell viper

Avoid tourniquet , which may damage local tissue more. While transporting a patient avoid any road injury or twinges or horns bushes which will bleed profusely. Bitten part should kept below heart level if active bleeding compression temporarily may prevent massive loss of blood.

At hospital bitten and swollen part should not be raised as it may cause rapid absorption venom in to circulation. No intramuscular injection like tetanus should be given unless 20MWBT(20 minutes whole blood clotting test) done and blood clotted within 20minutes. it should be reported blood clotted or not. Appearance of local edema soon after 30 to 60 minutes of bite confirms snake bite with envenoming . Before injection ASV take 2-3 ml of blood in a new detergent free dry glass test tube. Keep the tube undisturbed for 20 minutes and then tip it off ,if blood did not clot confirm hypofibrinogemia and venom action is persisting. This test should not be repeated before six hours of last dose of ASV as liver took six hour for regeneration of clotting factors.

ASV – 100 ml (10 vials) (early ASV prevent subsequent complications like renal failure and capillary leak syndrome) ASV diluted in 200Ml of 5% dextrose run over 30 minute by intravenous route. If external bleeding do not stop within 20-30 minutes, can repeat 50 ml of ASV. Subsequent dose to be decided by the response of 20MWBCT. Thrombocytopenic, abnormal cremated RBCs a diagnosis of DIC. In addition if to ASV one has to try plasma expanders s and whole blood transfusion which is rare required, if ASV is administered in time with adequate dose. Hypotension to be managed with fluid and inotropic agents. Severe hypotension due to bleed in adrenal and pituitary glands and abdominal bleed and endothelial dysfunction with capillary leak can needs heavy doses of intravenous methyl –prednisolone. And correction of electrolytes

Renal failure- Common cause of fatality due Russell's viper bite due to renal failure. One should keep in mind and look for renal failure at the time of admission. Risk factors for acute renal failure such as hypotension, hypovolemic can be corrected. There are lot of controversies regarding early introduction of diuretic, acetyl cysteine or allupurinol however in our experience intravenous frusemide 80-100 mg and oral acetyl cysteine 600 mg three times a day and intravenous manitol 100-200ML may help to arrest the renal damage.To evaluate these adjuvant therapy need a randomized control trial. In situation of renal failure with raised serum potassium may be treated with frusemide drip at rural areas or peritoneal dialysis or referred to higher center for haemo- dialysis. At rural setting one can attempt forced diuresis provided kidney responded to initial dose of intravenous frusemide

Local wound care is most important to avoid disability. Once the clotting mechanism is reversing (20MWBCT). The edematous limb can be elevated with rest on pillow below the knee. Glycerin Magsulf dressing, tense blebs aspiration by sterile needle and debridement of dead tissues and avoid surgical decompression unless required. Surgical intervention cause more harm than benefit. Start Intravenous antibiotics to overcome the infection. One should always rule out diabetes mellitus. Local complication can be avoided by early administration of ASV.

Echis- Cariniatus or saw scaled viper or carpet viper

It is of size 1 to 3 feet long. Head is sub ovate with short rounded snout. Body is cylindrical, short and snout. Body is covered with rough, serrated flank scales, neck Is constricted, color is pale brown,. A cruciform or trident or arrow type or just like the bird foot print shaped

mark seen on head. It is flourished in hot and humid climate all over coastal region and Jammu state of India. It is, diurnal in habit and capable of quick movement when necessary. It hibernates in the winter. It often climbs on to shrubs and plants. Always reay in position to bite on smallest provocation. strike is extremely rapid ,therefore it is one of the dangerous snakes. It forms a double coil, form of figure of 8 with its head in the center for a striking position. The coils keep moving against each other and serrated keels on the flank scales produce a hissing noise by friction. It is viviparous producing 3 to 15 young at a time. It injects 0.0046 gram venom at the time of bite. Farmers, hunters, laborers and person walking bare foot in jungle and rocky areas often bitten by this snake. After bite snake runs away, victim may give history of thorn bite But one should remember rapid edema ,pain and blood clot at bite or fangs marks confirm Echis bite.

Clinical manifestations of sawscaled viper

Soon after the bite within one hour there is development of swelling over the site. Fang marks or abrasions with clotted blood seen. Swelling may progress to more than one segments. Venom is of big molecular size and being circulated through the lymphatics hence within 60-120 minute victim experience a painful regional lymphadenopathy with ecchymosis. Acute bleeding is seen from gums or from abrasion or from vene-puncture site, seen within 90-120 minute of bite. If patient remains untreated bleeding will persists for 1-2 weeks in the form of blood stain sputum, haematuria . Such patients are markedly anemic and reported to hospital for weakness or non-healing cellulites with uncontrolled bleeding from cellulites. Natural immunity against the echis carinatius venom developed in a cases of repeated bite by same species in a endemic areas as minimum clinical involvement in subsequent bite reported in Jammu region. Renal failure due to echis carinatus reported from Pondichery and Jammu areas. Rarely from Maharashtra..

Management Echis- Cariniatus or saw scaled viper or carpet viper

Local wound care as mention in Russell' viper bite.

ASV in Maharashtra ASV required are 30-50 Ml however in Jammu and Pondicherry it may required >100 Ml to correct bleeding disorder. And management of renal failure.

Green pit viper and bamboo pit (Trimeresurus)

Pit viper victims report during Manson season . Sudden rapid development of massive edema without regional involvement. Rarely victim manifests external bleeding or renal failure snakebite cases are reported from Kerala characterized by local edema and rarely a systemic bleeding disorder.

Coagulopathy and renal failure due to Hump-nosed pit viper snake bite have been reported from Kerala state which was previously thought of a non-venomous snake. No antivenom for these two vipers is available in India. However empirical treatment with polyvalent venom as paraspecificity may some time help to alleviate the envenoming.

Antivenom should be administered as soon as signs systemic or severe local swelling are noted . The mean times between envenoming and death are 8 hours (12 minute to 120hours) in cobras, 18 (3-63) hours in bungarus caeruleus(krait) , 3 days (15 minutes to 264 hours0 viper Russell's viper and 5 days (25 to 41 days) for echis carinatus. The approximate serum half life of antivenom in envenomed victims ranges from 26 to 95 hours. Before discharge envenomed victims should be closely observed daily for minimum 3 to 4 days.

Antivenom reaction and its management

No skin test should be performed as it doesn't give any surety regarding reaction. It is merely a killing vital time. ASV reaction is due to complement activation and nor related IGE reaction.test dose only detect AGE type sensitivity.

Antivenom should not be given intramuscularly or locally at the bite site. It should be administered by qualified person with having knowledge of anaphylaxis reaction and its management. However snake catchers or trekkers should take with them few ampoules of ASV in case of accident, so as to make is ready available to a doctor.

Reaction of ASV can develop within 10-180 minutes. The incidence is increased with dose of antivenom and speed of administered. Bolus dose may give rapid reaction. A turbid solution of ASV (may precipitate severe reaction) should be thrown away. Earliest symptoms are hotness in ears, scalp , itching over scalp, urticaria, sudden onset of intractable cough, nausea, vomiting, goose skin , giddiness often complained of

uneasiness , suffocation and irrelevant behavior . Fever, tachycardia. Febrile reactions due to contamination of ASV with endotoxin like compounds, fever, rigors, vasodilatation and hypotension occur within 1to 2 hours of treatment. Children get febrile convulsions.

Systemic anaphylaxis: sudden onset of projectile profound vomiting, sphincter relaxation, hypotension, bronchospasm and angio-edema. Cold cyanosed extremities. These reactions are due to complement activation by immune complexes or aggregates of immune globulin.

Delayed reaction serum sickness can develop between 5 to 24 days of ASV therapy. Incidence is depends upon the dose of ASV. However now because of extensive publication regarding doses of ASV such reaction is rare. Clinically characterized by pyrexia of unknown origin, itching , arthalgia, lymphadenopathy. Joint swellings, mononeuritis multiplex albuminuria and rarely encephaloparhy.

Management of reaction to ASV

Stop the ASV drip.Injection adrenalin 0.5 ml of 0.1 % to be administered by intramuscular route on lateral of the thigh. Dose can be repeated if not controlled. In a situation were life is at stake consists of severe hypotension, bronchospasm, laryngeal edema adrenalin to be 1000 microgram (one ml) to be diluted in 9 cc of normal saline total 10 cc so one ml content 100 mcrogram adrenalin can be given 1 ml intravenously every 5 minutes till reaction is reduced. In addition to this intravenous aminophyline, head low position ,intravenous normal saline ,H1 blocker, chlophenaramine maleate, intravenous methyl prednisolone , inotrops ,nasal oxygen at time may required endotracheal intubation and ventilation. Irrespective of due care reaction is over and re administration of ASV develop re-reaction in such situation one can select ASV from another batch and try. Patient should not die of reaction so also due to snake bite envenoming.

One should not afraid of administration of ASV in a severe venomous bite provided fully prepared to treat the severe reaction. Many victims are referred from primary health center to rural or district hospital without giving ASV died on way to hospital. Many time we read in referred letter that patient is sensitive to test dose of ASV hence not administered , it is merely a pseudo excuses. One should sit by the side of victim during treatment as if treating our blood relatives. At primary health center or rural hospital victim should not be transferred unless full dose of ASV completed. No victim should be transferred with ASV drip on as during transports it is difficult to manage the anaphylaxis if occurred

Scientists should make attempts to prepare venomous toxoid to immunize the farmers and risky population against venomous snake toxins. Toxicologists should make an attempt to prepare the pharmacological antidote to venom actions. Antivenom producers in India should prepare Elisa kit for detection of venom antigen in blood and prepare antivenom from venoms obtained from snakes caught from relevant areas of country. Proper use simple mosquito net prevent snake bite , scorpion sting Mosquito (malaria, filidia ,encephalitis , dengue ,chikengunea ,zinka virus).

Regarding diagnosis, treatment, training z,and prevention of snake bite a B category neglected tropical disease a resolution adopted at world health assembly (24th may (2018).

The attending doctor gets immense satisfaction when the serious poor victim of snake bite recovers.

Recommend for readings.

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ORIGINAL ARTICLE

Screening Of Gestational Diabetes Mellitus And Hypothyroidism: Camouflaged Areas.

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ABSTRACT

Objective : Correlation of the 2 hours post glucose load value of OGTT and TSH levels among the pregnant women at a gestational age of 24-28 weeks.

Methodology : We have collected test result of **2 hours post glucose load value of** Oral Glucose Tolerance Test (**OGTT**) and TSH values with other data (age, sex, and family history) of pregnant women attending at the Department of Obstetrics and Gynaecology, KLE's Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi. The post prandial blood glucose level was estimated as per DIPSI guidelines. TSH estimation was done by chemiluminescent assay. TSH normal range is 0.27-4.20 µIU/ml, above and below the normal range is considered as abnormal thyroid function.

Result : The normal range of TSH estimated by CLIA is 0.27-4.20 µIU/ml, values above 4.27 µIU/ml values are considered as hypothyroidism and below 0.27 µIU/ml is considered as hyperthyroidism In our study a significant and positive correlation was observed between post prandial blood glucose level and TSH level in cases group ($r=0.1573$, $p<0.05$) at 5% level of significance. A negative correlation was observed between post prandial blood glucose level and TSH level ($r=-0.0872$, $p>0.05$) in controls at 5% level of significance.

Conclusion : Our study suggests that TSH and blood glucose levels are interdependent in GDM group. There is a need of evaluating TSH level in early pregnancy. Subnormal TSH levels may be predictor for GDM and its complications.

Key words : GDM, TSH, Pregnancy. CLIA, OGTT

Introduction

Pregnancy is a physiological state, where all endocrine glands functioning alters according to needs of mother and fetus as compared to non- pregnant women due to metabolic stress or effect of pregnancy hormones such as progesterone, human chorionic somatomammotropic and human Chorionic Gonadotropin (hCG) hormones.[1] In an endocrine system, thyroid gland is a metabolic regulator in normal human life. During the pregnancy thyroid abnormality is one of the common complications seen in which subclinical hypothyroidism is prevalent. If subclinical hypothyroidism occur in pregnancy it may act as risk factor for Gestational Diabetes Mellitus (GDM).[2] An increased thyrotropin levels and positive thyroid antibodies during pregnancy are usually associated with incidence of GDM and low birth weight of fetus.[3,4] Pregnant women with higher anti-Thyroid peroxidase (anti-TPO) titre and family history of diabetes have more chances of developing post-pregnancy thyroiditis.[5]

Earlier studies show that approx. 6.47 % and 4.58% of Indian pregnant women suffer from subclinical hypothyroidism and overt hypothyroidism respectively.[6] In US thyroid dysfunction is seen in 2-3% of pregnant women, in which subclinical hypothyroidism is prominent.[7] About 16.55% of Indian pregnant women[8] and 5.8% of USA pregnant women are diagnosed for GDM.[9] Thyrotropin is a glycoprotein in nature with molecular weight of 3000 Daltons. Two subunits are present in TSH, α subunit incorporate the species specific characters and β subunit incorporate immunological characters. A sequence of amino acid in α subunit is similar to the Luteinising hormone (LH), Follicle Stimulating Hormone (FSH) and human Chorionic Gonadotropin hormone (hCG).[10,11,12,13,]

There is a conflicting view regarding thyroid dysfunction in gestational diabetic females. Some studies state that there is no association between gestational diabetes and thyroid dysfunction,[14,15,16,] but other studies have shown that increase in serum thyrotropin levels with normal serum FT_4 had been risk of GDM in the same pregnancy.[17] Even GDM was found

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in a pregnant women with family history of diabetes mellitus and thyroid disorder.[18] Hypothyroxinemia occurs among patients with GDM and hypothyroid patients are more susceptible for GDM.[2,3,18] Objective of the present study is to correlate the post prandial blood glucose and TSH levels among pregnant women.

Material and Methods

The study protocol was approved by Institutional Ethical committee of Jawaharlal Nehru Medical College, Belagavi reference no. MDC/DOME/82 dated 24/03/2017. After obtaining informed consent from the participants; blood glucose result of 2 hours post load of 75 grams of anhydrous glucose during performing OGTT and TSH values were collected. Other demographic data like age, sex, and family history was collected from the reports of pregnant women attending at the Department of Obstetrics and Gynaecology, of KLE's Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi.

Study duration is one year, from January 2017 to December 2017. The study protocol was submitted in December 2016. Ethical clearance, data collection, data analysis and interpretation were done in the study period. Blood glucose result of 2 hours post load of 75 grams of anhydrous glucose during performing OGTT was estimated at the gestational age of 24- 28 weeks that is in third trimester. DIPSI guidelines for estimating the blood sugar level: Irrespective of fasting or non-fasting, subject has to drink 75g of anhydrous glucose mixed in 300 ml of water (or 82.5g of monohydrate glucose can be given) then the blood sample is taken after 2 hours to estimate glucose level by Hexokinase method in Cobas e 501. TSH estimation was done by chemiluminescent assay (CLIA) in Cobas e 601.

Data from total 300 pregnant women were collected. Sample size was calculated from $n = [2pq + 2(pq/r)]^2 + 2$; sample size was 300 considering SD as 12%. As per WHO the diagnostic criteria depending on estimated blood glucose levels after 2 hours of glucose load for diagnosing Decreased Gestational Glucose Tolerance (DGGT), Gestational Diabetes Mellitus (GDM) and pre-existing Diabetes Mellitus are as shown in Table-1.[7]

Table : Blood glucose levels and diagnosis

2 hrs Blood glucose levels in mg/dl	Diagnosis
≥ 120	DGGT
≥ 140	GDM
≥ 200	Diabetic

These pregnant women (n =300) were equally divided into two groups: as control or non-GDM (post prandial blood glucose level < 140 mg/dl) (n= 150) and remaining are GDM cases (post prandial blood glucose level ⩾ 140 mg/dl) (n=150). TSH normal range is 0.27-4.20 µIU/ml, above and below the normal range is considered as abnormal TSH level. TSH level was compared between GDM group and non-GDM group.

Inclusion criteria: All the pregnant women between the gestational age of 24-28 weeks

Exclusion criteria: Pregnancy with other complications such as personal history of thyroid disorders, type-1 diabetes, frequent miscarriages with type- 2 diabetes mellitus, previous head or neck irradiation and overt diabetes.

Statistical analysis : Study data was analysed by **Karl Pearson's correlation coefficient** method to correlate post prandial blood glucose level and TSH level in GDM and non-GDM pregnant women.

Results

A significant positive correlation was observed between post prandial blood glucose level and TSH level in GDM group and summarised in Table- 2 and Graph-1. A significant negative correlation observed between blood glucose levels after 2 hours of glucose load and TSH level in control group and summarised in Table-3 and Graph-2. The mean level of TSH is significantly higher in GDM cases as compared to control group. The mean scores are also present in the Table-4, 5 and Graph-5.

Table 2: Correlation between post prandial Blood glucose level in mg/dl and TSH (µIU/ml) scores in GDM cases by Karl Pearson's correlation coefficient method

Variables	Correlation between post prandial Blood glucose level in mg/dl		
	r(X,Y)	t-value	p-value
TSH (µIU/ml) scores	0.1573	1.9471	0.0500*

*p<0.05

Graph-1: Correlation between post prandial Blood glucose level in mg/dl and TSH (µIU/ml) scores in GDM group

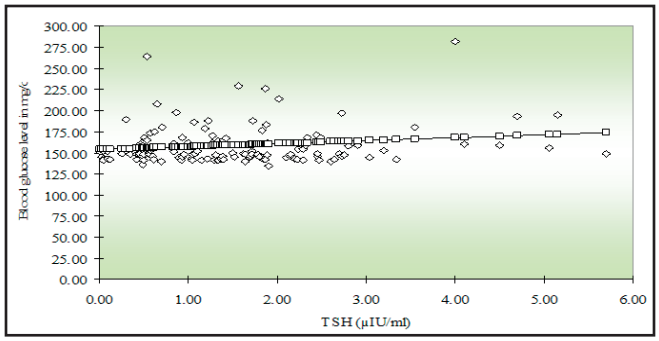

Table 3: Correlation between blood glucose levels after 2 hours of glucose load of 75 grams of anhydrous glucose in mg/dl and TSH (µIU/ml) scores in control group by Karl Pearson's correlation coefficient method

Variables	Correlation between prandial Blood glucose level in mg/dl		
	r(X,Y)	t-value	p-value
TSH (µIU/ml) scores	-0.0872	-1.0645	0.2888

Graph-2: Correlation between post prandial Blood glucose level in mg/dl and TSH (µIU/ml) scores in control group

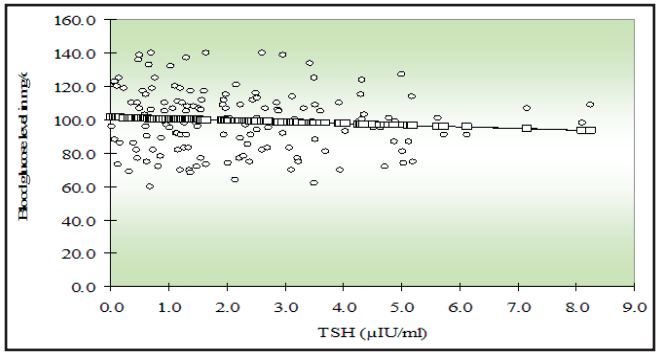

Table-4: Summery of TSH (µIU/ml) scores in controls and GDM

Groups	Mean	SD	SE	95% CI for Mean		t-value	p-value
				Lower Bound	Upper Bound		
Controls	2.23	1.70	0.14	1.96	2.51	4.0502	0.0001*
Cases	1.55	1.18	0.10	1.36	1.74		
Total	1.89	1.50	0.09	1.72	2.06		

*p<0.05

The mean SD and SE of TSH in two study groups in the above table

Discussion

A significant and positive correlation was observed between blood glucose levels after 2 hours of glucose load of 75 grams of anhydrous glucose and TSH level in GDM cases group (r=0.1573, p<0.05) at 5% level of significance (Table-2 and Graph-1). It indicates that the post prandial blood glucose level and TSH level of GDM cases are dependent on each other. A significant and negative correlation observed between post prandial blood glucose level and TSH level (r=-0.0872, p>0.05) in controls at 5% level of significance (Table-3 and Figure-2). It indicates that post prandial blood glucose level and TSH level are independent in control groups. A significant difference was observed between control and GDM with mean TSH levels (t= 4.0502, p<0.05) at 5% level. It means that, the mean level of TSH is significantly higher in GDM cases as compared to control group. The mean scores are also present in the Table - 4, 5 and Graph-3.

A mean TSH level is 1.55±1.18 µIU/ml and 2.23±1.7 µIU/ml in GDM and control groups respectively with P value 0.001 which is statistically significant. Similar result was observed in the study carried out by Parham. M, et al,[2] where mean TSH levels in non-GDM group was 1.74±1.47µIU/ml and for GDM group it was 3.43±2.06µIU/ml and P value is 0.023. Thus there is significant difference in mean TSH levels between GDM and Non GDM groups. Hypothyroidism during pregnancy can lead to increased risk of abortion, low birth weight, stress during parturition, preterm labour, preeclampsia, growth retardation of foetus, foetal

death.[2,6]. Haddow JE in his study observed that untreated hypothyroid women gave birth to children who suffered 7-point IQ deficit at the age of 7-9 years compared to children born to normal pregnant women.[19]

Whereas in a study of M M Agarwal et al, mean TSH levels in non GDM group was 1.05±2.05 µIU/ml and in GDM group it was 1.02±2.69 µIU/ml and P value is 0.81 which is statistically non significant.[14] In a study of Velkoska Nakova V, et al, mean TSH levels in GDM group were 1.9±1.3µIU/ml and in normal healthy women 1.8±1.0 µIU/ml.[18] Both mean values of GDM and control group are within a normal range. In a study of Elrazi.A.A, et al, there was no significant difference in TSH level between control and GDM pregnant women (p=0.283)[15]. From these studies there is a conflicting result observed, whether mean TSH level is affected by GDM or not.

It was observed during our study that 95% CI 1.96 – 2.51 in GDM for TSH levels. Another study conducted by Das Bishnu Prasad, et al, which consists of 100 pregnant women with hypothyroidism and 100 pregnant women with normal TSH level. In both groups they evaluated incidence of GDM. The outcome was 8% of study group and 1% of control group well diagnosed as GDM. There was a statistical significance of GDM in hypothyroidism pregnant women (p=0.0349).[17] In a study of Polyxeni Karakosta, et al, study showed that, incidence of gestational diabetes increases 4 times in women with high thyrotropin level and autoimmune thyroiditis in early pregnancy with 95% CI 1.0 - 1.2.[3] Thus from these studies, it is seen that incidence of GDM is significant in thyroid dysfunction diagnosed pregnant women.

In our study GDM group consist of 4% women having hypothyroidism, similar results observed in the study of *Shahbazian H et al, 4.5% of GDM group had subclinical hypothyroidism.*[9] *Increased incidence of hypothyroidism in GDM pregnant women is observed in the study of Parham* M et al, 27% 0f GDM group had hypothyroidism.[2]

Limitation of the present study was that we couldn't correlate T_3, T_4, Thyroid peroxidase (TPO) values for all the trimester as these parameters were not available. The objective of our study was to find the thyroid abnormalities in GDM diagnosed pregnant women, since the pregnant women was not followed up for all the trimester and the data analysed was only at the gestational week 24-28, significance of thyroid abnormalities throughout the pregnancy remains unidentified. These issues can be addressed in future studies.

Conclusion

Conflicting discussion is present regarding the thyroid dysfunction in pregnant women preferably in GDM group. Our study suggests that blood glucose level after 2 hours of glucose load of 75 grams of anhydrous glucose and TSH levels are interdependent in GDM group in this geographical area. Subnormal TSH levels may be the predictor for GDM and its complications. Early screening for thyroid dysfunction and GDM in pregnancy will improve the maternal and foetal outcome in terms of morbidity and mortality. Subclinical hypothyroidism will affect the organogenesis of foetus. Undiagnosed Diabetes Mellitus in pregnancy can cause neuronal and cardiac deformities in foetus along with less severe effects of fetal macrosomia and hypoglycemia in immediate post-natal period. Thus screening for GDM and hypothyroidism is mandatory increase the maternal and fetal wellbeing.

Conflict of interest : None

Funding Sources : None

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ORIGINAL ARTICLE

An Overview Of Graft Materials For Reconstructing Tympanic Membrane. Is Cartilage Island Graft The Ideal Material?

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ABSTRACT

Tympanoplasty is a procedure to eradicate disease in the middle ear and to reconstruct the hearing mechanism with or without tympanic membrane(TM) grafting. Various grafting materials such as Temporalis fascia, cartilage, perichondrium, vein, fat and cartilage island graft can be used for TM reconstruction. This study compares the audiological outcome of different grafting materials-temporalis fascia, tragal cartilage and cartilage island for tympanoplasty and state the ideal graft.

Objectives : To compare the outcome in terms of residual perforation & postoperative hearing improvement (air-bone gap closure).

Methods : The study included 90 patients, 30 in each group of tympanoplasty (underlay technique) using temporalis fascia, tragal cartilage and cartilage island graft. The hearing outcomes were compared by using pure tone audiometry at 6 months postoperatively.

Results : The hearing outcome was improved in all groups but was statistically significant in the cartilage island group when compared to both the other groups ($p<0.001$). Hearing results of temporalis and tragal cartilage tympanoplasty are similar and statistically insignificant ($P=1$). Graft uptake of cartilage island is best with no failures in our limited series. Graft uptake of temporalis fascia is slightly better than cartilage graft (statistically insignificant $p=1$).

Conclusion : Overall, cartilage island graft is much superior to either the temporalis fascia or the whole cartilage graft. Its tensile strength and low metabolic rate makes it the best graft material and an ideal solution for TM perforation reconstruction.

Keywords : cartilage island, tympanoplasty, comparative study, grafts.

Introduction

A graft is a tissue or organ used to implant or transplant, to replace a damaged part or compensate for the defect. Skin, bone, cartilage, blood vessel, nerve, muscle, cornea and whole organs are used as grafts for example, vascular grafts in cardiac bypass surgery, cable grafts for nerve reconstruction, filler bone grafts in bony cavity, buccal mucosa graft in urethral strictures, porcine skin graft in severe burns, rectus fascia/fascia lata in urinary bladder. In otology also, various grafting materials such as skin, perichondrium, vein, temporalis fascia, dura and cartilage are used for reconstruction of tympanic membrane(TM) perforation in tympanoplasty. TM reconstruction dates back to 1640 when Pig's bladder was stretched over an ivory tube to close the drum perforation, further followed by use of fish bladder, pedicle flaps, vein, fat, temporalis fascia, tragal cartilage, perichondrium and cartilage island grafts. The TM plays a significant role in the physiology of hearing and its perforations significantly impair the quality of life for millions of patients.

The temporalis fascia is the most commonly used graft in tympanoplasty. However, long term use of this graft has not proved satisfactory in cases of advanced diseases. It showed a higher chance of re-perforation, atrophy and retraction leading to failures. To overcome these fallacies, cartilage grafts with/without perichondrium were used. However, being thick and stiff, it mechanically reduces the vibratory pattern of the TM contributing to some hearing impairment.

Cartilage island tympanoplasty is a new technique which combines the benefits of fascia and cartilage both, respectively. The tensile strength of perichondrium along with the low metabolic rate of cartilage contributes to the higher graft uptake and hearing improvement.

This study was undertaken to get an overview of

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different grafting materials and to compare their uptake and audiological outcome.

Materials And Methods

This prospective study was carried out from August, 2014 to September, 2016 on patients attending the ENT outpatient department of a tertiary centre. Study included a sample of 90 patients divided into 3 groups of 30 each. The ethical committee approval and permission prior to starting the study was taken. Informed written consents were undertaken from all the patients undergoing the surgery according to the Ethics Committee protocol. Patients with inactive chronic otitis media (dry ear for minimum 3 months) were included. Patients with active disease, revision cases and at extreme of ages were excluded. Type I underlay tympanoplasty was conducted using the postauricular approach. 49 cases were conducted under general anesthesia and 41 cases under local anesthesia. Temporalis fascia (for group 1), tragal cartilage (for group 2) and cartilage island graft using tragal cartilage (for group 3) were harvested in the respective surgical groups. Pure tone audiometry was done at 6 months post-operatively and average air-bone gap was calculated using 500, 1000 and 2000 Hz, respectively.

Results

In this study, majority (46.6%) of the patients belonged to the age group 21-30 years. 36.7% and 16.7% patients were in the age group of 31 to 60 years and 16-20 years of age, respectively. This distribution was statistically insignificant with respect to the graft used.

Table I : Distribution of patients as per Preoperative hearing levels

Preoperative Air – Bone gap (db)	Temporalis fascia No. (%)	Tragal cartilage No. (%)	Cartilage island No. (%)	Total No. (%)
0 – 10	1(3.3)	1(3.3)	2(6.7)	4(4.44)
11 – 20	14(46.7)	13(43.3)	13(43.3)	40(44.4)
21 – 30	11(36.7)	12(40.0)	10(33.3)	33(36.7)
≥31	4(13.3)	4(13.3)	5(16.7)	13(14.4)
Total	30(33.3)	30(33.3)	30(33.3)	90(100.0)
Mean±SD (Preoperative air - bone gap in dB)	24.4±7.3	24.7±7.2	23.5±9.0	
F Value	0.157			
P Value	0.855			

As per table I, 48%, 37% and 14% cases had slight, mild and moderate hearing loss, pre-operatively.

Table II : Distribution of patients as per Postoperative hearing levels

Postoperative Air – Bone gap (db)	Temporalis fascia (group 1) No. (%)	Tragal cartilage (group 2) No. (%)	Cartilage island (group 3) No. (%)	Total No. (%)
0 – 10	9(30.0)	12(40.0)	29(96.7)	50(55.6)
11 – 20	18(60.0)	14(46.7)	1(3.3)	33(36.7)
21 – 30	2(6.7)	4(13.3)	0(0)	6(6.7)
≥31	1(3.3)	0(0)	0(0)	1(1.3)
Total	30(33.3)	30(33.3)	30(33.3)	90(100.0)
Mean±SD (Postoperative air - bone gap in dB)	15.1±7.3	15.4±6.9	5.6±2.7	
F Value	25.252			
P Value	<0.0001			
Post hoc test(Bonferroni test)	P value=1 between group 1 and 2 P value< 0.0001 between group 1 and 3 P value< 0.0001 between group 2 and 3			

As per table II, the post-operative hearing analysis indicates 56% and 42% patients showed air-bone gap upto 0-10 dB level and 11-20 dB level, respectively. 30% patients of temporalis fascia, 40% patients of tragal cartilage and 96% patients of cartilage island tympanoplasty showed postoperative air-bone gap in the range of 0-10 dB. There was no statistical significant difference (p=1) between the temporalis fascia and tragal cartilage groups. However, there was statistical significant difference (p<0.001) between the tragal cartilage and cartilage island groups and similarly, between the temporalis fascia and cartilage island groups.

Table III: Post-operative hearing improvement (air-bone gap closure).

Post-operative hearing improvement (dB)	Temporalis fascia (dB)(group 1)	Tragal cartilage (dB)(group 2)	Cartilage island (dB)(group 3)
Mean±SD	9.3±5.8	9.2±4.0	17.7±7.9
F Value	19.12		
P Value	<0.0001		
Post hoc test (Bonferroni test)	P=1 between group 1 and 2 P< 0.0001 between group 1 and 3 P< 0.0001 between group 2 and 3		

As per table III, the mean post-operative hearing improvement (air-bone gap closure) was 17.7 dB for cartilage island while it was 9.3 and 9.2 dB for temporalis fascia and tragal cartilage groups,

respectively.

Overall 92.2% cases showed successful graft uptake, out of which 100% cases of cartilage island had successful closure, while 90% and 86.7% cases of temporalis fascia and tragal cartilage showed successful closure.

Even though there is no statistical significant difference (p=0.133) amongst the three study groups, which might be due to the small sample size, the success rate of cartilage island graft was superior than the temporalis fascia and tragal cartilage groups.

Discussion

The purpose of our study was to emphasise the merits of cartilage island tympanoplasty over other grafting methods due to the deficiency of existing studies on cartilage island tympanoplasty.

Hearing results:

Overall 92% of the patients amongst all the groups in our study showed hearing improvement while 8% showed no or meagre improvement post-operatively at 6 months. 96% cases of cartilage island tympanoplasty showed a post-operative air-bone gap of less than 10 dB, while the comparable figures in temporalis fascia and tragal cartilage groups were only 30% and 40%, respectively.

The mean post-operative air-bone gap using temporalis fascia, tragal cartilage and cartilage island were 15.1 dB, 15.4 dB and 5.6 dB, respectively. There was no statistical significance (p=1) between the post-operative hearing levels of temporalis fascia and tragal cartilage.

Our results of fascia and tragal cartilage compare well with the reports given by Gerber[1] and Gierek T[2] in their respective comparative study between temporalis fascia and tragal cartilage tympanoplasty. However, both of them studied only fascia and tragal cartilage but did not study cartilage island, hence the significant improvement by cartilage island could not be compared.

Kalcioglu T [3] found a post-operative air-bone gap of 11.67, 8.34 and 7.36 dB for 500, 1000 and 2000 Hz respectively for temporalis fascia tympanoplasty. All cases showed a post-operative air-bone gap between the range of 7-20 dB, compared to15.1 dB for temporalis fascia in our study.

Sohil Vaidya et al [4] stated a post-operative air-bone gap of 17.05 dB for temporalis fascia. 96% cases showed a post-operative air-bone gap of less than 20 dB at 6 months as compared 90% cases in our study which is statistically insignificant.

The temporalis fascia graft has always given good results with respect to hearing levels as per the data and studies available in the past. Our study also proved the same with satisfactory hearing results post-operatively.

Hartwein J[5] observed a post-operative air-bone gap of 18.5, 17.5 and 16.5 dB at 500, 1000 and 2000 Hz using tragal cartilage graft which compared to 15.4 dB of our study is statistically insignificant.

Aidonis I et al [6] in his study with cartilage shield grafts concluded that the cartilage may affect the hearing results due to its thickness and rigid nature.

Khan MM [7] achieved post-operative air-bone gap closure within 7.06+/-3.39 dB for sliced tragal cartilage. His study being evaluated on 223 cases gave far superior results than our study but, it is an exception.

Sohil Vaidya [4] observed an average post-operative air-bone gap of 16.3 dB for cartilage shield tympanoplasty with 92.30% cases showing post-operative air-bone gap of less than 20 dB, similar to our study.

Cartilage being thicker and rigid was considered to affect the acoustic properties. Also due to its opacity, the middle ear area cannot be examined as in temporalis fascia which gives visibility of the middle ear. But with the new techniques and methods like slicing technique, the hearing results have improved over the years with it being almost equivalent when compared to temporalis fascia graft.

Cartilage island tympanoplasty results in a superior closure of the air-bone gap. Our study gave superior results as the technique used had modifications in the fashioning of the cartilage island. The cartilage was thinned and only a small portion of cartilage corresponding to the size of the perforation was fashioned as an island with the perichondrium forming the rest of the periphery of the graft (Figure 1, 2, and 3.). The tensile strength of the perichondrium along with the low metabolic properties of the cartilage contributed to higher graft uptake rate and hearing improvement when compared to temporalis fascia or tragal cartilage individually. Chances of retraction and pocket formation are also minimal.

Sunita Chhapola [8] emphasized that composite cartilage-perichondrium graft would counteract negative middle ear pressure which is of paramount importance in Eustachian tube dysfunction cases. The appropriate cartilage thickness would not hamper conduction of sound and protect graft from retraction or re-perforation.

Desarda K K [9] achieved 96% success rate using tragal cartilage with perichondrium as a composite graft, stating it as the best material for tympanoplasty.

Kalcioglu T [3] found post-operative air-bone gap to be 12.5, 9.67 and 8.67 dB at 500, 1000 and 2000 Hz for cartilage island grafts. Karaman [10] found post-operative air-bone gap closure of 20.2, 23.58 and 22.23 dB at 500, 1000 and 2000 Hz for cartilage island graft which was superior to our study.

Veysel Yurttas et al [11] achieved 93% success rate of cartilage island tympanoplasty. No graft lateralisation or displacement into the middle ear occurred, concluding that if cartilage graft is prepared and placed properly then cartilage island tympanoplasty appears to provide better success rates and hearing results. Similarly, Genc S [12] observed the post-operative air-bone closure of more than 19 dB with cartilage island graft.

Tyagi BS [13] observed air-bone gap closure within 0 to 30 dB in 94.55% cases of cartilage island tympanoplasty. The main advantage of the cartilage island graft was observed to be its very low metabolic rate, other advantages being its nutrition by diffusion, pliability making it easy to work with and its resistance to deformation from pressure variations.

Graft uptake rate:

In our study, the graft uptake rate was 92% at 6 months postoperatively with 8% cases of residual perforation (failure).

Kalcioglu T [3] found graft uptake rates to be 86.1% and 95% while Rajeev Reddy [14] observed 95.77% and 98.36% graft uptake rates with temporalis and cartilage-perichondrium island grafts, respectively comparable to our results of 90% and 100%. Similarly, Karaman E [11] observed 97.29% graft uptake of cartilage island tympanoplasty.

Most of the graft failures were due to postoperative infection either via the Eustachian tube or external auditory canal. Low socioeconomic strata, poor personal hygiene and care were also responsible for failure.

The cartilage island graft has proved superior to both the whole cartilage and temporalis fascia graft in a way that graft uptake rate is 100% and hearing results are much better. It combines the stability and strength of cartilage and the resilience of perichondrium together. The island of cartilage just helps to plug the perforation and remaining perichondrium underlaying the rest of the tympanic membrane gives strength to the tympanic membrane. Thus, we see 100% graft uptake in a group of 30 patients even though in a very large group it may fall slightly. Surprisingly, the hearing results of cartilage island graft was far superior to the other 2 groups. One reason could be, as the island of cartilage is just of the size of the perforation, it's not adding to the mass of the handle of malleus and impeding the movement of the malleus. The whole cartilage, on other hand, which extends from one perimeter to other perimeter catching the handle of malleus in between, will add bulk not only to the whole tympanic membrane and handle of malleus but could also impede the movement of handle of malleus. The cartilage island graft also takes care of the issue of weakness associated with the temporalis fascia.

As regards the technique, it is little more difficult than the other two. It requires a certain degree of exposure and competence in otology surgery before one can embark on cartilage island tympanoplasty. Carving an exact island of cartilage, at the same time not injuring the remaining perichondrium on which the cartilage is sliced is a skilful job. Hence, although this is not a surgery for newcomers, all the middle level surgeons should be able to perform this very easily.

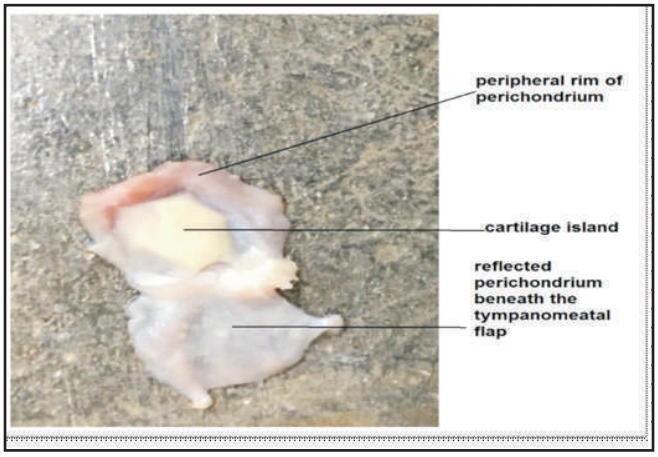

Figure 1 Cartilage island graft

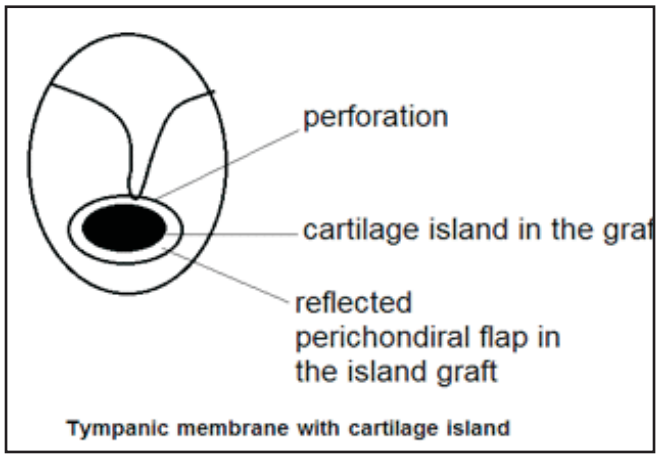

Figure 2

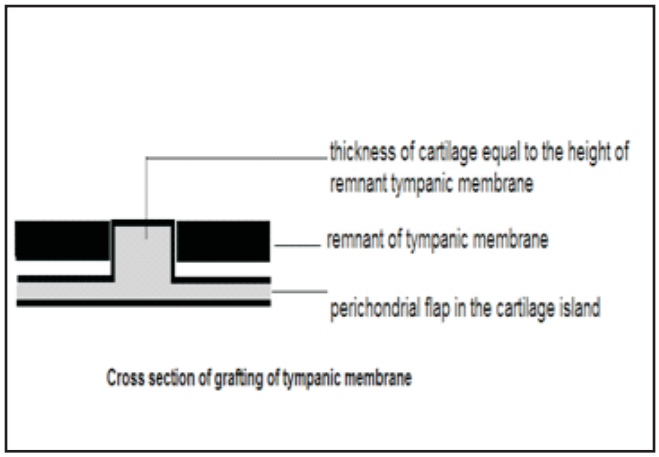

Figure 3

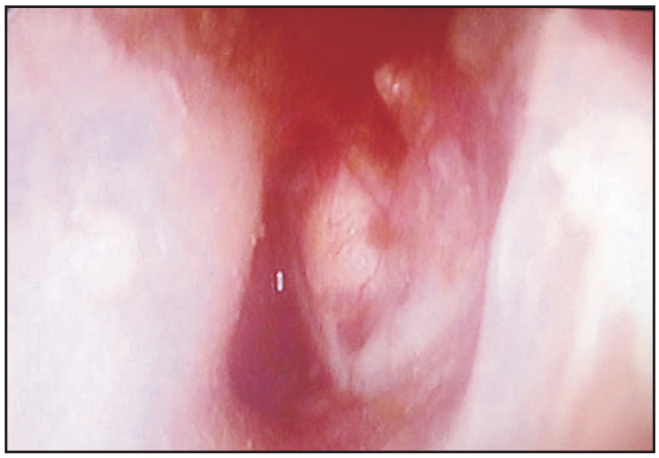

Figure 4 Cartilage island Neotympanum

Conclusion

Cartilage island is a far superior graft material than temporalis fascia and tragal cartilage for tympanoplasty.

Graft uptake of cartilage island is best with no failures in our limited series. Graft uptake of temporalis fascia and tragal cartilage are also good, with slight better results of temporalis fascia over tragal cartilage.

Overall, cartilage island graft is much superior to any of the graft materials for successful graft uptake and hearing results. Its tensile strength and low metabolic rate makes it the best graft material and an ideal solution for Tympanic membrane perforation reconstruction.

Conflict of interest nil

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ORIGINAL ARTICLE

A Comparative Study Of Pre And Post Operative Sino Nasal Outcome Test (SNOT-22) Score In Patients Of Chronic Sinusitis

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ABSTRACT

Objectives:

1. To evaluate the SNOT-22 score as a quality of life outcome measure in chronic rhinosinusitis pre and post-operatively.

2. To compare the improvement in scores in patients with and without polyposis

Material and methods : A prospective longitudinal cohort study was conducted between January 2014 to December 2015including 40 patients with chronic rhinosinusitis(CRS) and SNOT-22 questionnaire wa scompleted by every patient preoperatively and post-operatively at two months after endoscopic sinus surgery

Results : Total 40 patients; Mean age of patients 34.15 years with equal proportion of males and females (20:20). Mean time between pre-op and post op evaluation was 68.34 days. 75% bilateral, 25% unilateral. Patients with polyps:60%, patients without polyps:40%.The mean pre-operative SNOT-22 score was 32.9(range 6 to 65,SD 15.11) and the mean postoperative score was 13.60(SD 13.17,range:0 to 48). The SNOT-22 mean score at 2 months postoperative examination was significantly lower than that of preoperative score (p<0.001), indicating the responsiveness of the SNOT-22. Nasal obstruction, runny nose, need to blow the nose, decreased smell and frustrated are the five most common symptoms in the preop group .Frustrated, sad, reduced productivity, waking up tired, fatigue and sneezing were most common complaints in postop group. Mean pre-operative SNOT-22 score in patients with polyps was 31.75 and in patients without polyps was 34.63(p-value: 0.555, statistically insignificant).Mean post-operative SNOT-22 score in patients with polyps was 12.17 and in patients without polyps was 15.75(p-value:0.394, statistically insignificant). The average improvement in the total symptom score was 58.66% of baseline, pre-operative values.

Conclusion : SNOT-22 questionnaire is a valid outcome measuring tool for assessing quality of life of patients with CRS and the effectiveness of surgical treatment. ESS is effective in improving subjective and objective outcomes in appropriately selected patients with CRS. SNOT-22 can be used to improve patient understanding of the potential outcomes after ESS and may improve preference-sensitive care for CRS.

KEYWORDS : Chronic rhinosinusitis, Quality of life, Endoscopic Sinus surgery,SNOT-22

Introduction

Chronic rhinosinusitis (CRS) is an inflammatory disease affecting the nose and paranasal sinus, producing symptoms lasting over 12 weeks.[1] Chronic rhinosinusitis (CRS), with or without nasal polyps, is a prevalent disease, which causes a significant impact on quality of life(QoL). Health related QoL is defined as those aspects of an individual's subjective experience that relate both directly and indirectly to health, disease, disability and impairment.[2] There are different types of outcome measures for both pharmaceutical treatment and endoscopic sinus surgery (ESS). The Sino-Nasal Outcome Test (SNOT) is a patient reported measure of outcome in sino-nasal disorders. The SNOT-22 is a self-administered multiple-choice 22-item test that is usually scored with a single summary score (0–5) without domains or subscales. This instrument assesses a broad range of health and health-related quality of life problems including physical problems, functional limitations, and emotional consequences.SNOT-22 questionnaire has a specific advantage of evaluating the impact of sinonasal disease on both specific and general health issues before and after the operation. Hence, SNOT-22 may be used in patient selection for surgery in chronic rhinosinusitis.The SNOT-22 has already been adopted by many clinicians for the assessment of CRS, nasal septal surgery and septorhinoplasty. SNOT-22 questionnaire is in English and has been translated and validated in several languages including Greek, Portuguese and Spanish.[3,4]

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Material & Methods

This prospective longitudinal cohort study conducted from January 2014 to December 2015 included CRS patients from ENT Department of a tertiary care hospital in Pune and followed up for two months after endoscopic sinus surgery.Ethical Committee permission was granted and informed consent from each patient was taken.This study has no conflict of interests from any of the authors. Detailed history was taken which included important aspects like history of bronchial asthma, tobacco chewing, smoking, previous surgery andaspirin sensitivity.Thorough clinical examination was done for each patient. Each subject completed the SNOT-22 during a clinic visit by answering all questions based on a 0–5 scale, where 0 defines no problems with the given symptom and 5 defines maximal problems(Table I). Patients were given maximal medical therapy for 6 weeks and those not responding do treatment were considered for surgery. The postoperative SNOT-22 was completed between two to three months after the surgery. Post-op care included topical steroids for 2 weeks and nasal douching for 2 months.

Inclusion-Exclusion criteria

All patients with CRS (with/without nasal polyps), defined as the presence, for a period exceeding twelve weeks, of two or more of the following four symptoms, and one of these should be the first two: nasal blockage, obstruction or congestion, nasal discharge (anterior or posterior nasal drip), facial pain or pressure, and reduction or loss of smell according to EPOS CRITERIA were included in the study.

Exclusion criteria included patients with secondary causes of rhinosinusitis, pregnancy and lactation, ages <15 years or >60 years. Patients who did not follow up at 2 months post operatively or who were illiterate were excluded from the study.

SINO-NASAL OUTCOME TEST (SNOT-22)

Name:_____

I.D.:_____DATE:_____

Below you will find a list of symptoms and social/emotional consequences of your rhinosinusitis. We would like to know more about these problems and would appreciate your answering the following questions to the best of your ability. Please rate your problems as they have been over the past two weeks. Thank you for your participation. Do not hesitate to ask for assistance if necessary.

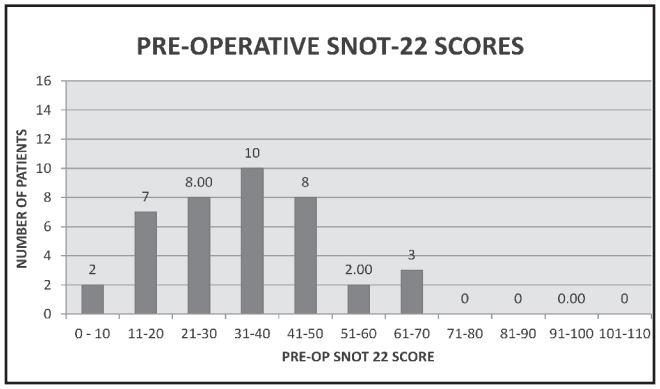
Table. I SNOT-22 Questionnaire

1. Considering how severe the problem is when you experience it and how frequently it happens, please rate each item below on how "bad" it is by circling the number that corresponds with how you feel using this scale:	No problem	Very mild problem	Mild or slight problem	Moderate problem	Severe Problem	Problem as bad as it can be	5 most important symptoms
1. Need to blow nose	0	1	2	3	4	5	
2. Sneezing	0	1	2	3	4	5	
3. Runny nose	0	1	2	3	4	5	
4. Cough	0	1	2	3	4	5	
5. Post-nasal discharge	0	1	2	3	4	5	
6. Thick nasal discharge	0	1	2	3	4	5	
7. Ear fullness	0	1	2	3	4	5	
8. Dizziness	0	1	2	3	4	5	
9. Ear pain	0	1	2	3	4	5	
10. Facial pain/pressure	0	1	2	3	4	5	
11. Difficulty falling asleep	0	1	2	3	4	5	
12. Wake up at night	0	1	2	3	4	5	
13. Lack of a good night's sleep	0	1	2	3	4	5	
14. Wake up tired	0	1	2	3	4	5	
15. Fatigue	0	1	2	3	4	5	
16. Reduced productivity	0	1	2	3	4	5	
17. Reduced concentration	0	1	2	3	4	5	
18.Frustrated/restless/ irritable	0	1	2	3	4	5	
19. Sad	0	1	2	3	4	5	
20. Embarrassed	0	1	2	3	4	5	
21. Loss of smell or taste	0	1	2	3	4	5	
22. Nasal obstruction	0	1	2	3	4	5	
2.Please mark the most important items affecting your health _____ ↑ (maximum of 5 items)							

Observations And Results

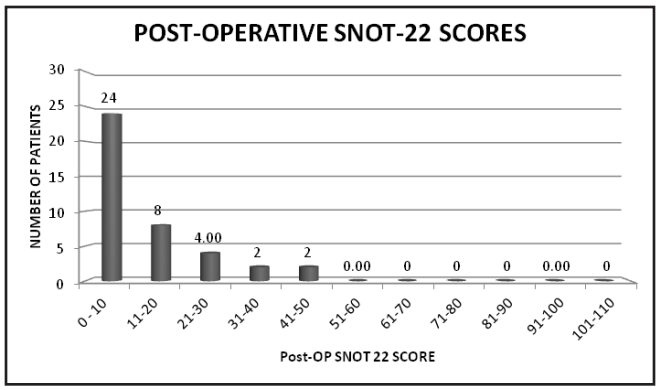
A total of 40 patients with CRS were included in the study. The mean age of patients was 34.15 years with equal proportion of males and females(20:20). Mean time between pre-op and post op evaluation was 68.34 days (range 50 days to 76 days). Most of the cases (75%) were bilateral and the rest were all unilateral with no right or left preponderance. Our study had a preponderance of patients with polyps(60%) compared to patients without polyps(40%).The mean pre-operative SNOT-22 score was 32.9(range 6 to 65,SD 15.11) and the mean postoperative scores was 13.60 (SD

13.17,range:0 to 48). The SNOT-22 mean score at 2 months postoperative examination was significantly lower than that of preoperative score ($p<0.001$), indicating the responsiveness of the SNOT-22(Graph I and II).



Graph I. Pre-operative SNOT-22 Scores

Most patients had pre-op SNOT-22 score in range between 11-50(82.5% patients).Hence, the distribution of pre-operative SNOT-22 score is a roughly symmetrical, bell shaped distribution.The highest pre-op SNOT 22 score was 65 and the lowest was 6.



Graph II. Post-operative SNOT-22 Scores

Maximum patients had post-op SNOT-22 score was in the range of 0-20 (80% patients).The highest post-op SNOT 22 score was 48 and the lowest was 0.

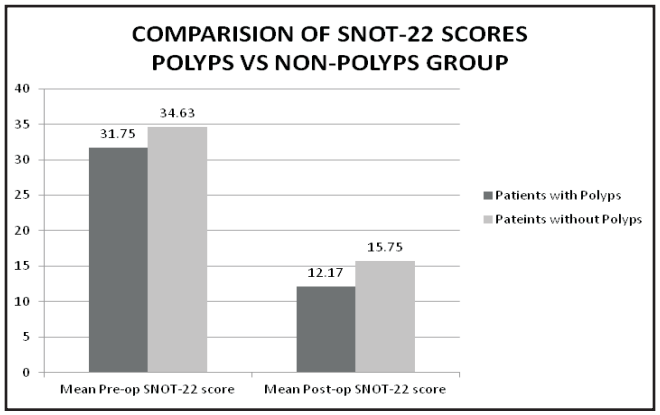
Values highlighted in the above table indicate the items for which P-value was not significant.

Table II. Symptoms with Pre and Post-operative mean values and P-value for each symptom.

Sr. No	Symptoms	Pre Mean(SD)	Post Mean(SD)	P Value
1.	Need to blow nose	2.53(1.71)	0.40(0.87)	0.000
2.	Nasal obstruction	4.13(1.40)	0.48(1.15)	0.000
3.	Sneezing	1.70(1.68)	0.83(1.32)	0.001
4.	Runny nose	2.68(1.80)	0.43(0.93)	0.000
5.	Cough	1.05(1.72)	0.43(1.08)	0.018
6.	Post Nasal discharge	0.95(1.36)	0.50(0.96)	0.048
7.	Thick Nasal discharge	1.55(1.65)	0.28(0.72)	0.000
8.	Ear fullness	0.88(1.42)	0.50(1.09)	**0.066***
9.	Dizziness	0.60(0.87)	0.40(0.90)	**0.160**
10.	Ear Pain	0.30(0.88)	0.25(0.74)	**0.599**
11.	Facial pain/pressure	1.03(1.48)	0.65(1.23)	**0.066**
12.	Loss of smell/taste	2.5(2.16)	0.50(1.06)	0.000
13.	Difficulty falling asleep	1.08(1.54)	0.55(1.11)	0.045
14.	Wake up at night	1.20(1.56)	0.75(1.21)	**0.054**
15.	Lack of a good night's sleep	1.23(1.59)	0.53(1.11)	0.012
16.	Wake up tired	1.03(1.29)	0.83(1.32)	**0.299**
17.	Fatigue	1.20(1.40)	0.83(1.20)	**0.165**
18.	Reduced Productivity	1.20(1.62)	0.88(1.34)	**0.079**
19.	Reduced Concentration	1.13(1.45)	0.75(1.21)	**0.070**
20.	Frustrated/Irritable/Restless	2.15(1.63)	1.30(1.52)	0.002
21.	Sad	1.78(1.62)	1.20(1.36)	0.003
22.	Embarrased	1.05(1.54)	0.50(0.99)	0.007

Nasal obstruction(mean 4.13),runny nose(2.68) ,need to blow the nose(2.53),decreased smell(2.5) and frustrated (2.15) are the five most common symptoms in the pre-op group. The lowest pre op mean scores were for ear pain(0.30) and dizziness(0.60). Frustrated(2.15) and sad(1.78) were the main complaints present in the follow-up period, followed by reduced productivity(0.88),waking up tired(0.83), fatigue(0.83) and sneezing(0.83)(Table II).P-value was significant for most items except ear fullness, ear pain, dizziness, facial pain/pressure, wake up at night, wake up tired, fatigue, reduced productivity and reduced concentration.

Graph III. Comparison of polyposis vs non-polyposis group in preop and postop groups



Mean pre-operative SNOT-22 score in patients with polyps: 31.75(SD 15.82) and without polyps: 34.63(SD 14.30); P-value: 0.555(statistically insignificant).

Mean post-operative SNOT-22 score in patients with polyps: 12.17(SD 13.89)and without polyps: 15.75(SD 12.14); P-value: 0.394(statistically insignificant).(Graph III)

Discussion

The use of disease-specific questionnaires adds valuable information to scientific knowledge. The SNOT-22 questionnaire is easy to apply in clinical practice and is both quick and easy to complete for the patient.The purpose of this study was to assess quality of life of patients of chronic rhinosinusitis by using SNOT-22 as an indicator of health related quality of life(HRQoL), to determine the effects of FESS on clinical symptoms in patients with CRSand to compare the symptom severity in patients with or without polyposis.

Male to female ratio was equal. Hence no gender predilection was noted. Most of the cases (75%) were bilateral as the allergic nature of CRS with polyps leads to most of the cases occurring bilaterally. Comparing the mean pre-op score of our study(32.9) with other similar studies like Lachanas et.al(50.17)[3] in Greek population, Mascarenhas(61.29)[5] in Brazilian population, the mean in our study has a lower value. Hence, this could indicate variations in disease patterns and prevalence of CRS and differences in life and culture in different geographical areas leading to higher pre-op mean as compared to our study.

Gillett et.al(2009)[6] in their pilot study of the SNOT 22 score in adults with no sinonasal disease took the median score 7 as the normal SNOT 22 score and recommended that care should be taken when suggesting treatment on patients with a score below this level. The minimum score at which the patient was taken for surgery in our study was 6 which correlates with guidelines suggested by various studies.Paired t-test showed that the difference in preop and postop mean was statistically significant ($p < 0.001$).Hence ESS lead to improvement in symptoms.

Nasal obstruction is the most prevalent complaint at the time of diagnosis while frustrated was the most common symptom in postop group. Our study showed improvements in nasal symptoms like nasal obstruction(88.37%),runny nose(83.95%),need to blow the nose(84.18%) and decreased smell/taste(80%). Emotional symptoms like frustrated and sad also showed significant improvements from their pre-operative value(39.53% and 32.58% respectively). ESS was also especially effective ($p<.05$) at addressing postnasal and thick discharge, cough, sneezing, related sleep disturbances such as lack of a good night's sleep and difficulty in falling asleep and other emotional symptoms such as embarrassment. The benefit of the surgery was particularly high in symptoms badly scored preoperatively. These findings correspond with previous studies, which have cited the relatively greater improvement among more severely affected patients.[7,8]

Questions regarding ear pain, ear fullness, dizziness, reduced productivity, reduced concentration, fatigue were present in very few patients both pre- and postoperatively (p-value insignificant).On the other hand, the items like embarrassed, irritable and sad were scored severely on the preoperative questionnaire, and were dramatically improved by the surgery. This could suggest that these items may cover a large range of feelings from discomfort with nasal breathing to the social and psychological implications of chronic sinusitis.

Overall, there was a small difference in mean pre-op score between the polyp(31.75) and non-polyp(34.63) which was not statistically significant (p-value: 0.555). Similarly, the post op SNOT-22 score was also higher in non-polyposis group(15.75) compared to the polyposis group (12.17) with p-value as 0.394(not significant).

Mascarenhas et.al (2013)[5] also noted similar results with p-value as 0.59 preoperatively and 0.42 at 3 month follow-up using unpaired t-test. The polyposis group showed a greater improvement in SNOT-22 score of 61.66% as compared to non-polyposis group(54.51%). Hence the results of our study could indicate that the polyposis group has a slightly better HRQoL after ESS than patients without polyps.

The average improvement in the total symptom score in our study was 58.66% of baseline, pre-operative values. Kennedy et.al (2013)[9] and Rudmik et al. (2015)[10] observed a 51% and 46.4% improvement in their preoperative SNOT-22 scores respectively. All the SNOT-22 score groups showed a relative improvement in scores indicating that ESS was effective in improving symptoms even in patients who scored low preoperatively.

Patients with score range between 61-70 had the least improvement in their SNOT-22 score (-35.78%) indicating that patients who score high in the score groups above 60 preoperatively have a tendency to score high postoperatively also. Such patients could have other causes like medical diseases or psychological problems which might be unrelated to CRS.

Conclusion

Both subjective and objective outcomes assessment are important in CRS.Questionnaires are simpler and cheaper methods to assist the surgeon in selecting patients for surgery and in providing a reliable follow-up.SNOT-22 questionnaire is a valid outcome measuring tool for assessing quality of life of patients with CRS and the effectiveness of surgical treatment. ESS is effective in improving subjective and objective outcomes in appropriately selected patients with CRS.Patient based outcome measures such as SNOT-22 can be predictors of outcome of surgical procedure. Patients with low SNOT-22 scores preoperatively show less QoL improvement after ESS. Information from this study can be used to improve patient understanding of the potential outcomes after ESS and may improve preference-sensitive care for CRS.We believe that SNOT-22 may well be used on a regular basis by the clinician in OPD to obtain information about the full range of problems associated with rhinosinusitis. It can aid researchers in diagnosing and assessing the degree and effect of rhinosinusitis on health status and maybe identify patient factors that predict maximum treatment response.[11,12]

Conflict of Interest: None

Funding source: None

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ORIGINAL ARTICLE

Utility Of Haematological Investigations In Early Diagnosis Of Neonatal Sepsis

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ABSTRACT

Objective : To study the haematological parameters for early diagnosis of neonatal sepsis.

Methods : Cross sectional study of haematological profile of 100 neonates with clinical suspicion of sepsis and 100 healthy neonates attending immunisation in a tertiary health care centre was done. Blood was collected by venepuncture and total white cell count, absolute neutrophil count, immature to total neutrophil count ratio, morphological features of leucocytes, platelet count, blood culture and C- reactive protein were studied.

Results : Out of 100 patients, 46 cases had leucopenia (Total leucocyte count <5000/mm^3), 84 cases had Immature:Total neutrophil ratio (I:T ratio) >0.2, 44 cases had Absolute Neutrophil Count (ANC) <1800/mm^3, 65 cases had toxic changes in neutrophils, 40 cases had thrombocytopenia (platelet count <1,50,000/mm^3), 58 cases had positive blood culture and CRP (C Reactive Protein) was >6mg/dl in 86 cases.

Conclusion : In neonates with clinically suspected sepsis, CRP, I:T ratio and toxic changes in neutrophils were more sensitive and thus more helpful for early diagnosis of neonatal sepsis. The remaining parameters were less sensitive, so less helpful.

Key Words : I:T ratio, ANC, CRP, sepsis.

Introduction

Neonatal sepsis is a clinical syndrome resulting from pathophysiological effects of severe bacterial infection in the first month of life[1]. It affects 2-6 neonates/1000 live births in the developed countries. The incidence is 3-4 times higher in developing countries causing 30- 50% of the total neonatal deaths per year[2].

It can be classified into 2 subtypes: Early onset sepsis (EOS) - onset of symptoms before 72 hours of life and late onset sepsis (LOS)- onset of symptoms after 72 hours of life. EOS is caused by organisms prevalent in the maternal genital tract and LOS is caused by organisms in external environment i.e home or hospital.

Early diagnosis of sepsis is difficult as the early signs are subtle and nonspecific. Isolation of the causative organisms by blood culture requires 48-72 hours[3]. The mortality rate of untreated sepsis can be upto 50%[4]. Therefore, treatment i.e antibiotics are initiated while waiting for results. Unnecessary and increased antibiotic consumption cause side-effects, emergence of multi-resistant strains, long hospitalization, separation of the infants from mothers and increased health costs. Thus, there is need of a simple, rapid and inexpensive diagnostic technique for early diagnosis of neonatal sepsis.

Materials And Methods

A cross sectional study of haematological profile of 100 neonates with clinical suspicion of sepsis and 100 healthy neonates attending immunisation in a tertiary health care centre was done. The study was carried out from July 2014 to July 2016.

Cases were selected as per the clinical criteria for sepsis.Symptomatic cases, neonates of age upto 28 days and with birth weight more than 500 grams were included in the study. Neonates of age more than 28 days, with birth weight < 500 grams, those who received antibiotics before collection of sample, those with congenital anomalies and jaundice were excluded from the study.

Two cc of blood of neonate was collected in vaccutainer tube with trisodium EDTA as an anticoagulant. Total leucocyte count, platelet count and hemoglobin was obtained from ERMA which is an automated electronic 3-part differential cell counter. Total leucocyte count and platelet count were confirmed by examination on peripheral blood smear.

Peripheral blood smear was prepared with one drop of fresh heel prick blood and after air drying, stained with

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leishman stain. Stained peripheral smears were examined, differential count and immature neutrophils were counted. Absolute Neutrophil Count (ANC) was determined as follows :

Absolute Neutrophil Count = Neutrophils counted in 100 WBCs x Total WBC Count/100

Immature neutrophils were counted in 500 neutrophils in the smear and ratio of immature: mature neutrophils was determined as follows :

I:T ratio = Immature neutrophils in 500 WBCs / Total neutrophils in 500 WBCs

Morphological changes in neutrophils like toxic graunules, Dohle bodies, vacoulations were noted.

CRP was estimated by latex agglutination method with serum based kit (Beacon Diagnostics Pvt. Ltd.)

For blood culture,1-2 ml of sample was sent to the Department of Microbiology in the conventional blood culture broth, Automated Bact Alert culture system was used and the reports were obtained after 72 hrs.

Results

Out of 100 neonates, 70 were male, thus showing male preponderance. 65 patients were <3 days old which means early onset sepsis was more common. 42 patients had birth weight <2.5 kg and 88 patients had hemoglobin <13.6 gm/dl. Thus there is no association of low birth weight and low hemoglobin with sepsis. 46 patients had leucopenia i.e total leucocyte count <4000/cumm and 24 patients had leukocytosis i.e TLC >20,000/cumm. 84 patients had I:T i.e immature: total neutrophil ratio >0.2, 44 patients had ANC i.e absolute neutrophil count <1800/cumm. 65 cases had toxic changes in neutrophils. 40 cases had thrombocytopenia i.e platelet count <1,50,000/cumm. 86 cases had CRP i.e C reactive protein >6gm/dl and 58 cases had positive blood culture. Thus, CRP was the most useful parameter for early diagnosis of neonatal sepsis followed by I:T ratio and morphological changes in leucocytes. Blood culture was useful for early diagnosis of neonatal sepsis. TLC, ANC, hemoglobin and thrombocytopenia did not prove useful for early diagnosis of neonatal sepsis.

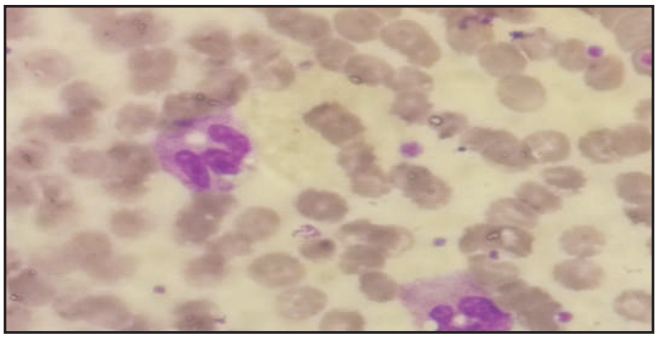

Fig 1-Cytoplasmic Vacuolisation in neutrophils in Leishman stain on 100x

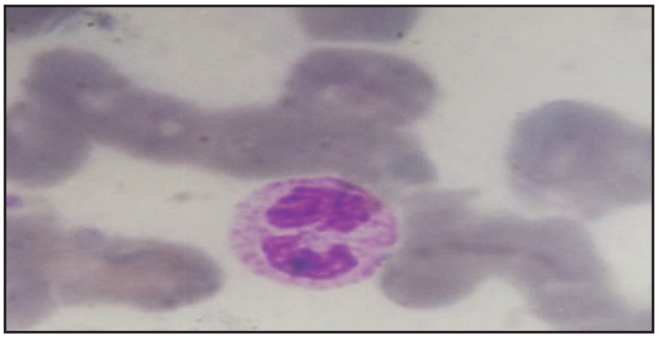

Fig 2-Toxic granules in neutrophil in Leishman stain on 100x

Table I: Test results of haematological investigations in cases and control

Parameter	Cases (n=100)	Control (n=100)
Sex		
Male	70	64
Female	30	36
Age		
-3 days	65	80
-28 days	35	20
Birth weight		
<2.5kg	42	20
>2.5 kg	58	80
Hemoglobin		
>13.6 gm/dl	88	90
<13.6gm/gl	12	10
TLC		
<4000/cumm	46	6
4000-20,000/cumm	30	88
>20,000/cumm	24	6
I:Tratio		
>0.2	84	1
<0.2	16	99
ANC		
<1800/cumm	44	3
>1800/cumm	56	97
Toxic chnges in neutrophils		
Present	65	2
Absent	35	98
Platelet count		
<1,50,000/cumm	40	20
>1,50,000/cumm	60	80
CRP		
>6mg/dl	86	1
<6mg/dl	14	99
Blood culture		
Positive	58	2
Negative	42	98

TABLE II: Sensitivity and specificity of hematological parameters

Parameters	Sensitivity	Specificity	P value
TLC <5000/cumm	46%	96%	<0.0001
ANC <1800/cumm	44%	97%	<0.0001
I:T ratio >0.2	84%	99%	<0.0001
Morphological changes in neutrophils	65%	98%	<0.0001
Platelet count <1,50,000/cumm	40%	80%	<0.002
CRP >6mg/dl	86%	99%	<0.0001
Blood culture positivity	58%	98%	<0.002

*P value is statistically significant for all the parameters.

Discussion

Neonatal sepsis was found to be more common in males than in females, 70% cases were male. The proportion was comparable to study carried out by Punyashetty et al[5] in 2016 showing 65% male predominance and with study carried out by Sriram et al[6] in 2010 showing 60% male predominance. In India, high male:female birth ratio and neg;leted female neonates add to the high rate of sepsis in male neonates[5].

Early onset sepsis was found in 65% of cases which was comparable with studies carried out by Khair et al[7] in 2010 and Punyashetty et al[5] in 2016 showing 66% and 64% cases respectively.

Leucopenia was found to have sensitivity of 46% of cases which was comparable to studies carried out by Buch et al[8] in 2011 and Basu et al[9] in 2014 showing sensitivity of 51% and 54% respectively.

A raised immature neutrophil count is found in patients with bacterial infections. Thus, I:T ratio can be used as a predictor of bacterial infections[8]. I:T ratio of >0.2 was found to have sensitivity of 84% of cases which was comparable to studies carried out by Buch et al[8] in 2011 and Khair et al[7] in 2013 showing sensitivity of 89% and 100% respectively.

Toxic changes in neutrophils were found to have sensitivity of 65% which was comparable with studies carried out by Makkar et al[10] in 2013 and Narsimha et a[111] in 2011 which showed sensitivity of 50% and 68% respectively.

Blood culture was found to have a sensitivity of 58% which was comparable with studies carried out by Punyashetty et al[5] in 2016 and Buch et al[8] in 2011 which showed sensitivity of 42% and 54% respectively.

CRP was found to have sensitivity of 86% which was found to be comparable with studies carried out by Supreetha et al[12] and Patel et al[13] in 2015, both of which showed sensitivity of 82%

Thus, neonatal sepsis was found to be more common in males and early onset sepsis was more common than late onset sepsis. CRP, I:T ratio and toxic changes in neutrophils were found to be more useful for early diagnosis of neonatal sepsis.

There was no relation of low birth weight and low hemoglobin with susceptibility to sepsis. ANC, blood culture and thrombocytopenia were not found to be useful for early diagnosis of neonatal sepsis.

Conclusion

The present study revealed that CRP was the most useful parameter with a sensitivity of 86% for early diagnosis of neonatal sepsis followed by I:T ratio and morphological changes in leucocytes with sensitivities of 84% and 65% respectively. .Blood culture had a sensitivity of 58%. TLC, ANC and thrombocytopenia had sensitivities of 46%, 44% and 40% respectively and were not very useful for early diagnosis of neonatal sepsis.

It is difficult to diagnose neonatal sepsis, especially in its early stages because of its nonspecific clinical symptoms. But the prognosis for sepsis mainly depends on early identification and treatment, therefore, these neonates are subjected to extensive diagnostic evaluation The blood culture results are obtained after 72 hours, leading to unnecessary administration of antibiotics in cases of suspected sepsis. Thus, simple haematological tests like CRP, I:T ratio and morphological changes in neutrophils can prove very helpful in early diagnosis of neonatal sepsis in remote, under resourced primary health care centres.

Conflict of Interests : None

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ORIGINAL ARTICLE

A Study Of Patterns & Correlates Of Nicotine Use In Relatives Of Patients Attending Psychiatry Outpatient Department In A Tertiary Care Hospital

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ABSTRACT

Background: Nicotine dependence is a major public health concern and causes significant morbidity and mortality.

Aim: To study pattern and correlates of nicotine use in relatives of patients attending psychiatry outpatient services in a tertiary care hospital.

Methods: 200 relatives between 18-65 years of age were included in the study over a six months period. Socio-demographic proforma was used to collect socio-demographic details and Fagerstrom test for nicotine dependence (both smoking and smokeless tobacco versions) were used to assess the frequency, severity and intensity of nicotine dependence.

Results: A total of 20% of the female relatives and 31% of the male relatives reported tobacco use. Only 20% had made attempts to quit in the past. 44% of the participants were not interested in quitting at the time of the study. Surprisingly, 66% of the female tobacco users admitted to nicotine use during pregnancy.

Conclusions: Early screening and aggressive management for nicotine by the health professionals is the need of the hour. All pregnant women and those attending clinics for medical problems should be specifically asked for any ongoing nicotine use.

Key words : Nicotine, tobacco smoking, smokeless tobacco(SLT), Fagerstorm test

Introduction

Nicotine addiction is most prevalent, deadly and costly among various substance use disorders. The problems caused by nicotine use are not behavioral. This leads to poor help seeking and referral to a professional for intervention.[1] Tobacco use can cause cancers of respiratory tract, digestive system, urinary system, lips & oral cavity. India has one of the highest rates of oral cancers in the world, 50% of which are because of tobacco.[2,3] Global Adult Tobacco Survey (GATS) conducted in 2009-10 indicated that 34.6% of the adults (47.9% males and 20.3% females) in India are current tobacco users.14% of the adults smoke (24.3% males and 2.9% females) and 25.9% use SLT (32.9% males and 18.4% females).Thirty eight percent adults in rural areas and 25% adults in urban areas use tobacco in some form or other.[4]

Addiction is influenced by multiple factors, such as environmental factors like availability, culture, peer pressure, and host factors like underlying predisposition to use substance.[5]

Several policies have been framed to fight this battle. However the number of tobacco users approaching for help have been limited. Poor access for rural population has been a major disadvantage.[6] A simple advice by a health professional for 30 sec can produce quitrates of 5 to 10% each year.[7] Also combined medicinal and behavioral approach can increase abstinence rates.[8]

Hence, to study the pattern of nicotine use at more regional level, we decided to undertake this study at psychiatry department where people taking treatment will be the representative sample of the society.

Materials And Methods

This was a cross sectional questionnaire based study in the relatives of new patients attending the psychiatry outpatient department. The sample size of 200 participants was finalized considering number of new patients coming to the unit per day, number of relatives accompanying patients for treatment, possibility of non-consent and duration of the study.

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Each relative who had given consent for the study was asked questions according to a semi structured proforma which included socio-demographic profile, questions on pattern and attitude towards nicotine use which was framed taking help of the GATS.[4] A standard questionnaire of Fagerstrom Test for Nicotine Dependence [9] and modified version of Fagerstrom Test for smokeless form of tobacco[10] was administered. The Fagerstrom Test for Nicotine Dependence–Smokeless Tobacco (FTND-ST) is a six item scale which provides a continuous measure of nicotine dependence. Total score of the scale ranges from 0 to 10, where a higher score indicates stronger dependence. FTND-ST has demonstrated good psychometric properties having good reliability and construct validity.[11] The entire questionnaire was administered by the investigators.

Subjects selection:

Subjects >18 years of age, not diagnosed or treated for any psychiatric illness in past except nicotine dependence and willing to give informed consent were included. After approval from Institutional Ethics Committee, we completed the study in six months. Statistical analysis was done using Statistical Package for Social sciences (ver.22).

Results

The study sample consisted of 200 relatives of the patients. Of these, 113 were female and 87 were male. Out of 113 female relatives 23(20.35%) reported tobacco use mostly in smokeless form. Among the 87 male relatives 27(31%) reported tobacco use, predominantly in smokeless form. The final study sample consisted of these 50 subjects using tobacco.

Age of participants ranged from 22 to 70 yrs. The mean age in our sample was 47.18 years (SD-12.5 years). According to Kuppuswamy classification of socioeconomic classes, majority (76%) of participants belonged to lower middle class. 88% belonged to Hindu religion followed by Muslim religion (12%). Subjects living in urban area & rural areas were 66% & 34% respectively. Eighteen candidates (36%) were educated till primary school followed by 14(29%) who were illiterate.

Majority (42%) were doing skilled work, followed by 36% in unskilled labor work or some household work. Among 23 female relatives 84% were married and 66% of them reported continued use of tobacco during their pregnancy as well.

When we enquired about presencetreport ofany any significant medical or surgical illness diagnosed in their past. However, majority (86%) reported they would visit doctors for complains of weakness or cough which would get better after some injection. (Table1)

Table 1: Socio demographic Profile:

Variable		Subjects using tobacco	Subjects screened
Gender	Male	27(31)	87
	Female	23(20.35)	113
	Total	50	200
Age	Range (X=50)		Mean±sd
	22 yrs to 70 yrs		47.18±12.5
Socio-economic class	X=50 (100%)		
	Lower middle class		38(76)
	Upper lower class		12(24)
Religion	Hindu		44(88)
	Muslim		6(12)
Residence	Urban		33(66)
	Rural		17(34)
Education	Illiterate		14(29)
	Primary		18(36)
	Secondary		10(20)
	Higher secondary		4(8)
	Graduate		4(8)
Work	Unskilled		18(36)
	Housewife		11(22)
	Skilled		21(42)
Marital Status	Married		42(84)
	Single		5(10)
	Widowed		3(6)
Past history of significant medical/surgical illness	Yes		5(10)
	No		45(90)
Use during Pregnancy	n=23 (100%)		
	Yes		15(65.2)
	No		8(34.8)

n –Total number of female subjects

Among the 50 tobacco users, 48(96%) were using tobacco in smokeless form while 5(10%) used it in smoking form. Among those using smokeless tobacco, chewing tobacco was predominant mode of intake (44.7%).Five participants (5.7% of total male subjectsscreened) used tobacco in smoking form preferably bidi and cigarette. Three participants used both forms of tobacco while two

used it in smoking form.

Regarding current pattern of use of tobacco, 40 participants were using tobacco daily while others used it on and off. 80% had not attempted to stop or quit it in last one year. Remaining had attempted quitting tobacco mainly after counseling i.e. approaching for help at nearest health care center but did not take any medicines. When asked about their current decision of quitting tobacco use, 22(44%) was not interested in quitting. Majority (75%) could hardly quit for more than a week. (Table 2)

Table 2: Clinical Profile:

Variable	Total=50(100%)		
Tobacco Use	Smokeless		48(96) *
	smoking		05(10) *
Patterns of use of tobacco in smokeless form n (%)	Chewing tobacco		24(50)
	Application on gums		19(39.5)
	Betel quid with tobacco		4(8.3)
	Snuff		1(2.2)
Total subjects using smokeless tobacco = 48(100) *			
Patterns of use of tobacco in smoking form (%)	Bidis		3(60)
	Manufactured Cigarettes		2(40)
Total subjects smoking tobacco = 5(100) *			
Current use of tobacco	X=50(%)		
	Daily		40(80)
	Less than Daily		10(20)
In past 12 months, tried to stop using tobacco	No		40(80)
	Yes 10(20)		
	Counseling - 6	NRT(Nicotine Replacement Therapy) - 2	Oral Medicines - 2
Longest duration of Quitting tobacco use	Months		8(16)
	Weeks		5(10)
	Days		13(26)
	<1 day		24(48)
Current thinking about tobacco use	Quit within the next month		15(30)
	Thinking within the next 12 months		4(8)
	Quit someday, but not next 12 months		9(18)
	Not interested to quit		22(44)
Age of first use	Range		Mean age(S.D)
	10 TO 50 years		24.6±8.4

* = 3 Subjects were using both form of tobacco

The mean age of start of tobacco use was 24.6 years (S.D ±8.4) with range of 10 to 50 years.17(34%) of total participants had started their use of tobacco when they were adolescents. On the questionnaire of pattern and attitude of nicotine use we had also assessed subjects perception of physicians approach towards nicotine use.70% subjects reported that they were not asked by the doctor about their tobacco use. Those who were asked or self-reported about tobacco use, 90% reported they were not advised to stop tobacco.

Table 3: Gender and pattern of smokeless Tobacco use:

Sex	Patterns of use of **smokeless** tobacco				Total
	Snuff	Chewing Tobacco	Betel Quid with Tobacco	Application on Gums	n (%)
Female	0(0.0)	5(21.73)	3(13.04)	15(65.21)	23(100)
Male	1(4.0)	17(68.0)	3(12.0)	4(16.0)	25(100)
Total	1(2.08)	22(45.83)	6(12.5)	19(39.58)	48(100)

The pattern of use of SLT in female subjects was mainly by application on gums(65.21) followed by those chewed tobacco(21.73%).Male subjects mainly used tobacco by chewing method(68%). Modified Fagerstorm scale for smokeless tobacco use found that 35 subjects(72.9%) were using tobacco in severe dependence pattern and 13(27.08%) were using in low to moderate dependence pattern.(Table 4) All 5 participants who smoked tobacco were doing it in severe dependence pattern. Tobacco use was continued by 22(44%) even if they were so ill that they were in bed most of the day.

Table 4: Modified Fagerstorm test results (smokeless tobacco):

	X=48 (%)	
Modified Fagerstorm scale	Severe dependence	35(72.9)
	Low-moderate dependence	13(27.08)

Discussion

Global adult tobacco survey(GATS) India reports more than one third population of them uses tobacco in some or the other form(12) & Maharashtra survey found that tobacco use in males and females was 42.5 %(smokeless tobacco-30%,Tobacco smoking-7.1% & both smoking and smokeless-5.3%) and 18.9% (smokeless tobacco-99.5%,Tobacco smoking-0.50%) respectively.

In our study tobacco use in males and females was 31%(smokeless tobacco-28.73%, Tobacco smoking-5.7%) and 20.3 %(all smokeless) respectively, similar to GATS

report of Maharashtra.[4]

The mean age of our study subjects was 47.18 years, which is higher as compared to previous studies as the selected samples were caregivers. One third of the study sample had started use in their adolescence.

Raj Narain et al observed a downward shift in age of initiation of tobacco use. [13] Mishra et al in their study found this age (specifically in females) as 26.23 years.[14] In Maharashtra, majority(41.9%) of the population had started their tobacco use between 20 to 34 years.[4] In our study the mean age of first use of tobacco was 24.6 years. Subrmaniam et al found higher tobacco use among the Hindus than Muslims.[15] Similar observation was found in our study where the tobacco use was 88% among Hindu subjects and rest were from Muslim community.

Bhan et al found that socioeconomic status continues to be inversely associated with the tobacco use.[16] They found that poorest households have 61.5% to 62.7% prevalence of tobacco use while the richest has 43.8%to 36.8%.In our study the lower middle class and upper middle class has 76% & 24% tobacco use respectively which is the socioeconomic class usually availing services of government run hospitals.

Pattern of tobacco use by females was similar to a study in urban Indian women were 22.3% of total female population consumed tobacco mainly in smokeless form.[14]

Only 34% of the population using tobacco had studied beyond primary school and engaged in unskilled work. The relation of illiteracy and low education level with tobacco consumption has been demonstrated in various studies [17] & also the rural preponderance over urban.[18]

Caleyachetty et al, found that the use of tobacco in any form during pregnancy was highest in southeast Asian countries (ranging from 1.3 to 10.9) which included India.[19] In India, prevalence of tobacco smoking and smokeless tobacco use was 1.0% and 7.2% respectively. 15(65.2%) of the total 23 female subjects continued tobacco use during their pregnancy. About 2/3rd were using tobacco in severe dependence pattern (72.9%) and some continued use even during medical illnesses(44%). People were still unaware of tobacco cessation clinics and hazards due to tobacco use.

In our study 56% subjects wanted to quit but could not continue abstinence. Given the multifactorial reasons for discontinuation of the abstinence from tobacco, lack of training and sensitization among health professionals, lack of feeling the need for tobacco cessation training in doctor community & use of tobacco by health care providers themselves[20] are major community barriers affecting the tobacco cessation policy.

Strengths &Limitations:

It is a well-designed cross-sectional study using a standard, reliable and valid scale for tobacco use. Study sample being from population of western region may not be representative of all the people from India.

Conclusion

Consumption of tobacco is prevalent in the society leading to hidden morbidity and mortality. Majority of them consume different forms of smokeless tobacco and initiation at young age.Attitude of healthcare professionals towards nicotine use needs to change. They should enquiry about tobacco use along with other relevant history even though not directly related to presentation of symptoms. Pregnant females must be enquired about use of any substances during their antenatal visits. Nicotine cessation clinics should be made mandatory in tertiary care hospitals.

Conflict of Interest - NIL

Funding Source - NIL

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ORIGINAL ARTICLE

EEG Waveform Changes On Application Of Alpha Binaural Beat Frequency In Healthy Individuals: An Exploratory Study

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ABSTRACT

Introduction - Binaural beats are subjective hearing sensations, that occur when one of the tones with specific frequency is applied to one ear, and another one with a slightly different frequency is applied to the other ear simultaneously. The listener perceives a resultant sound with a frequency equal to the difference of frequency of applied signals. Binaural beats have been shown to influence EEG waveform however there is dearth of information about the specifics.

Objective : To explore the effect of Binaural beats on brainwave entrainment.

Methods : 10 healthy participants of both genders between 18-21 years volunteered for the present study. The participants underwent 32 channel EEG recording protocol with eyes closed for ten minutes that included five minutes resting (non-music period) baseline, and five minutes with application of 10Hz binaural beats (music period). EEG analysis was done using RMS SuperSpec software (version 4.2.54. 1.1.307) and paired comparison using Mann Whitneyn test .

Results : The mean and standard deviation for percentage of delta, theta, alpha and beta frequency during resting was 34.5 ± 13.91, 22.5 ± 6.5, 23 ± 9.7 and 13.6 ± 8.08 and during music period was 23.2 ± 11.04, 28.60 ± 8.60, 32.5 ± 12.27 and 17.7 ± 8.30 respectively. Comparing the two periods a significant increment in alpha and theta wave and significant decrement in delta wave (p – value 0.03 & 0.04 respectively) was observed during the music period.

Conclusion : On application of alpha binaural beats, a relaxed, receptive and a bit of meditative state can be induced albeit Passively in healthy untrained volunteers. These findings may have therapeutic applications,

Key Words : Binaural Beats, EEG, Alpha - Theta waves, Wave form entrainment, Relaxed state

Introduction

Binaural beats are subjective hearing sensations, which occur when one of the tone signals is applied to one ear, and the other one, with a slightly different frequency is applied to the other ear simultaneously. A listener then perceives a resultant sound with amplitude that changes with a frequency equal to the difference of frequency of applied signals. The resulting beat frequency was found to influence the electrical signaling in the brain and induce different levels of consciousness depending on the frequency.[1]Binaural beats cause brainwaves to follow that frequency which leads to brain wave entrainment. The term brainwave entrainment refers to the use of rhythmic stimuli with the intention of producing a frequency-following response of brainwaves to match the frequency of the stimuli. [2]Thus binaural beating provides a unique opportunity to understand the power of rhythmic sound to influence the level of arousal.

In a study conducted by *Morris et al, when two different frequencies (*200 Hz to right and 210 Hz too left ear) *were* given, they produced a binaural beat frequency of 10 Hz. The 10 Hz binaural beats have shown to increase 10 Hz activity with equal frequency and amplitude of the brain waveform in both hemispheres.[3]

Several studies reported the utility of Binaural beat applications right from enhancement of cognitive ability[4], working memory capacity[5] to attention and mood.[6] These studies indicated that these changes are dependent on type and duration of binaural beat applications. There is relative paucity of data regarding brain wave entrainment especially in accordance to present study specifications (healthy college students, not trend in any type of relaxation or meditation), we thought it will be useful to carry out such a novel study in

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our hospital setting and to explore the pattern of changes in brain waves on application of binaural beats.

Materials And Methods

Ten healthy participants of both genders between 18 to 21 years of age from Smt. Kashibai Navale Medical College and General Hospital, Pune without having any prior experience or individual skills in meditation or brainwave entrainment activities volunteered in the present study. The subjects with any neurological disorder, known hearing damage, all those who have any history of a known medical condition (diabetes, hypertension, acute cardiac conditions) or any other psychological/psychiatric condition that potentially affects the E.E.G. were excluded from the study. Written informed consent was obtained and study was approved by Institutional Ethics Committee.

Binaural beats of 10 Hz (Alpha) were produced using Binaural Beats Application version 1.2 developed by Giorgio Calderola. A 195 Hz standard tone in the right ear and a 205 Hz in the left ear for Alpha carrier tone were used to attempt entrainment.

The tones used to elicit binaural beats were played through a pair of noise-cancelling stereo headphones positioned so the earpieces and headband did not press against E.E.G. electrodes and were stable.

The EEG was recorded with the subject's eyes closed and binaural beats of frequency 10Hz were given with the help of a smart phone application. A 32 channel E.E.G. was recorded. Electrodes were placed according to the standard EEG protocols, keeping C4 electrode as our reference electrode. A resting baseline E.E.G. was recorded for 5 minutes before the application of beats to check for normal waveform patterns. After that as per protocol an E.E.G. record was taken for 5 minutes to record the waveform patterns of the subject during the application of 10Hz Alpha Binaural beats.

Signal was de-noised using 1 Hz low pass and 35 Hz high pass filters and then processed signal was used for further analysis. The impedance at which the E.E.G. machine sampled the data was at 20 KΩ. The percent wave form was computed using RMS SuperSpec (version 4.2.54. 1.1.307) software. A non parametric Mann-Whitney test was used for statistical significance. P-value < .05 was considered as significant.

Results

As depicted in the Figure:1 and the table no 1. we have observed that during the non-music period the mean and standard deviation for delta, theta, alpha and beta frequency in percentage were 34.5 ± 13.91, 22.5 ± 6.5, 23 ± 9.7 and 13.6 ± 8.08 and during the music period mean and standard deviation for delta, theta, alpha and beta frequency in percentage were 23.2 ± 11.04, 28.60 ± 8.60, 32.5 ± 12.27 and 17.7 ± 8.30.

Statistical analysis using the Mann- Whitney test revealed a statistically significant increment in alpha and theta waves while decrement in delta waves during application of alpha binaural beats compared non music resting period.

Figure: 1 Mean & SD of Delta, Theta, Alpha, Beta waveforms during non music and music period

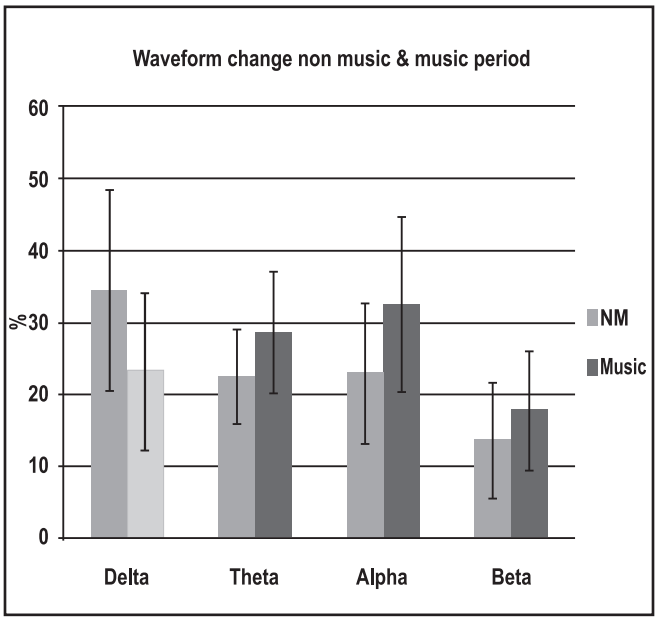

Table No: 1 Non parametric Mann Whitney's test

	Non-Music Period	Music Period	z-score	p value
Delta	34.50 ± 13.91.	23.30 ± 11.04 %	1.92	< 0.04*
Theta	22.50 ± 6.5 %	28.60 ± 8.60 %	- 1.7	< 0.04*
Alpha	23. 0 ± 9.7 %	32.50 ± 12.27 %	- 1.77	< 0.03*
Beta	13.60 ± 8.08 %	17.70 ± 8.30 %	- 0.94	NS

* Significant

Discussion

This study was novel for the present specifications and to the best of our knowledge our group was the first one in an Indian setting to explore the brainwave entrainment in healthy volunteers subjected to alpha binaural beat protocol. On comparing the two periods (music and non – music baseline resting period) we have observed a significant decrement in delta wave (p – value <0.04) and significant increment in alpha and theta waves (p - value of <0.03,0.04). Our study provides evidence that the application of alpha binaural beats in healthy untrained college students entrains the EEG waveform to alpha and theta waves.

Similar to our study, a study conducted by Gao et al with the binaural beats of frequencies of 1 (delta), 5 (theta), 10 (alpha) and 20 (beta) Hz given for 5 minutes duration and analyzed the relative powers of brain waves to detect EEG changes. They have observed an increment in relative power of theta and alpha range frequencies during delta and alpha binaural beat stimulation while there was a decrease in the beta range frequency during the same binaural beats frequencies application.[7]

However another study conducted by Vernon and colleagues where they have applied binaural beats of alpha (10 Hz) and beta (20 Hz) frequency ranges for 1 minute to observe the frequency following response over ten trials. Each trial included exposure to pure tone binaural beats. They observed overall reduction in the amplitudes of both beta and alpha frequencies during experimental as well as post experimental period.[8]

In yet another study by C. Kasprazk et al during the stimulus period with binaural beats of (the right ear — 110 Hz, the left ear — 100 Hz,) subjects generated significantly less beta and alpha frequency brain waves and significantly more theta frequency brain waves whereas delta remained unaffected.[9]

Interestingly a study conducted by Lavellee CF et. al and Ribary U et al in a group of mediation trained and untrained individuals the response invoked was shown to be dependent on how well trained the individual is in the art of meditation and on previous exposure or training with binaural beat stimulation there was a difference in the evoked brainwave activity even though the same stimulus was given.[10,11]

Atwater et.al examined EEG patterns associated with listening to a series of low-frequency binaural beats, they showed that during the stimulus periods, significantly less alpha and beta frequency brain waves were observed while significantly more delta and theta frequency brain waves were generated. However they have used pure tones designed to produce delta and theta binaural beats.[12]

Our results were in concordance with the study conducted by Gao et al while in contradiction to the study conducted by Vernon et al. The difference between our study and Vernon et.al, Lavellee CF et,al, Ribary U etal, Owens and Atwater maybe due to difference in selection of reference electrodes; selection of pure tone binaural beats and prior experience and training in meditation.

Rhythmic binaural beats appear to engender changes in cortical arousal, which can be objectively monitored with the free-running EEG. As the reticular formation is responsible for regulating cortical arousal,[13,14,15,16,17] it is suggested that the reticular formation serves as the mechanism of change in arousal levels engendered by externally initiated (e.g., music, rhythmic drumming, or binaural beats) coherent oscillations within the superior olivary nuclei and the cholinergic neurons within the nucleus reticularis.

Specific states of consciousness are shown to correlate with specific electrical signalling pattern in the cortex.[18] One who is focused and alert will often exhibit frequencies between 12 and 24 Hz, known as beta waves.[19] One who is relaxed and receptive to information exhibits frequencies between 7 and 11 Hz, known as alpha waves. One who is in a meditative state or on the cusp of falling asleep, will exhibit frequencies between 4 and 6 Hz called theta waves. One who is sleeping will exhibit very low waves, less than 4 Hz, called delta waves.[20]

In the present study on application of alpha binaural beats there was alpha and theta wave entrainment indicative of more relaxed, receptive and a bit of meditative state in these untrained individual.

Conclusion

On application of alpha binaural beats, a relaxed, receptive and a bit of meditative state can be induced albeit Passively in healthy untrained volunteers.

Further studies are required to explore the therapeutic implications of alpha binaural beat application on brain wave entrainment in patients.

Conflict of Interest - NIL

Funding Source - NIL

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CASE REPORT

Anti-Tuberculosis Drugs Induced Lichenoid Eruption: A Case Report

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ABSTRACT

Anti-tuberculosis drugs are known to cause diverse cutaneous adverse drug reactions ranging from milder pruritus, maculopapular exanthems, lichenoid eruptions, fixed drug eruption & urticaria to SCAR's like acute generalized exanthematous pustulosis, Steven-Johnson syndrome (SJS) and Toxic Epidermal Necrolysis (TEN). Exact prevalence of these ATT induced cutaneous ADRs is not known.

ATT induced lichenoid eruptions are commoner than SCARs. Lichenoid drug eruptions significantly overlap with lichen planus(LP) both clinically and histopathologically. But age of onset, duration of disease, predilecation for certain sites, history of offending drug intake lead us towards the diagnosis. Here WE are presenting a case of 50 years old female who developed LDE induced by ATT where probable culprit drugs were found put to be Isoniazid and Pyrazinamide.

KEYWORDS : LDE, LP, ATT, SCARs.

Introduction

ATT Induced lichenoid drug eruptions are known though its exact prevalence is not available in literature. Varying types of cutaneous ADR caused by ATT include a wide range from mildest pruritus to fatal SJS-TEN[7]. Here, we are presenting a case of LDE in a 50 year old female induced by first line ATT.

Case

A 50 year old female, known case of pulmonary tuberculosis was brought to dermatology OPD with chief complaints of generalized pruritus since 15 days. Patient was started on first line ATT 4 months back containing daily H(Isoniazid) 300 mg, R(Rifampicin) 450mg, Z(Pyrazinamide) 750mg and E(Ethambutol) 150mg. Intensive regimen was given for 2 months and then shifted to maintenance regimen 2 months back. Patient was apparently asymptomatic for 3 months after starting ATT and then developed itchy violaceous plaques and patches with erythematous hue and mild scaling predominantly over bilateral extensor aspect of extremities and trunk. These lesions were associated with periorbital, bilateral and pedal oedema and palmo plantar fissures. We asked the patient to stop ATT immediately and started her on oral prednisolone in tapering doses with anti-histaminics, topical emollients and topical antibiotics (for fissures).

Blood biochemistry showed anemia (hemoglobin – 9gm/dl)with leukocytosis (Total WBC Count – 15,000). Differential counts showed eosinophilia with absolute eosinophil count as (normal count – 30-350). Rest of blood investigations were within normal limits.

Skin biopsy showed hyperkeratosis, irregular acanthosis and mild spongiosis with band like lymphocytic infilterate, exocytosis and pigment incontinence in superficial dermis thus confirming the diagnosis of lichenoid reaction.

To find out exact causative drugs amongst all ATTs, oral sequential rechallenging was done after initial stabilization of patient. Emergency tray was kept ready with injectable steroids and antihistaminics. After 1/3rd dose of both Isoniazid and Pyrazinamide, patient landed with recurrence of pruritus with reappearance of erythema and scaling over face and extremities.[1,2] While re-ingestion of Rifampicin and Ethambutol even at full dose was uneventful. Naranjo adverse reaction probability scale showed probable ADR as total score came out to be +7.

Discussion

Lichenoid drug eruption (LDE) are known to be clinically and histopathologically similar with normal lichen planus (LP). Though some features like age of onset, duration of disease, predilection of sites, history of offending drugs intake may lead us towards the diagnosis. As name suggests, lichenoid infiltrate is common in both LP and LDE but certain points like

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deeper dermal and predominantly eosinophilic infiltrate with parakeratosis aid in distinguishing both conditions. Both sexes are equally affected but lichenoid drug eruptions tend to occur in adults approximately 10years older than those with idiopathic LP. Lichenoid drug eruptions have been associated with a wide verity of medications like gold, anti-malerial agents, angiotensin converting enzyme inhibitors, non-steroidal anti-inflammatory agents, thiazid diuretics, penicillamine, dental amalgams, beta blockers and proton pump inhibitors. [3]

Conclusion

Various types of drug reactions are known to occur in patients receiving ATT. The temporal appearance and clinical manifestation itself and aid in reaching the diagnosis of cutaneous adverse reaction to ATT.[4] Epidemiological data on the incidence and prevalence of adverse cutaneous reactions to ATT is limited. Benign maculopapular eruptions appeared to be most common. Of the literature we reviewed, H is the commonest drug implicated in LDE.[5] Following a standardized algorithm and scoring systems while evaluating a patient with a possible cutaneous reaction aid in accurate diagnosis and appropriate management. The initial measures include identifying and withholding the suspect culprit drug, systemic steroids under close monitoring along with antihistamines and emollients will resolve the reaction in most patients. Inter-disciplinary communication is important to avoid re-administration of culprit drug and thus prevent a severe form of reaction.

Conflict of interest : None

Funding source & sponsorship : None

Acknowledgment : Dept. of Pathology, B.J.G.M.C.

FIGURE-1: Voileceous patches over back.

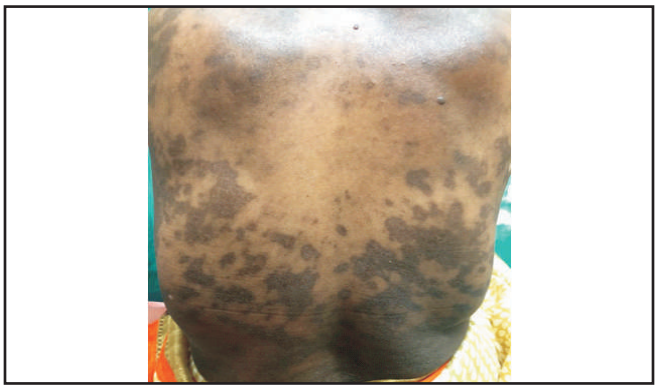
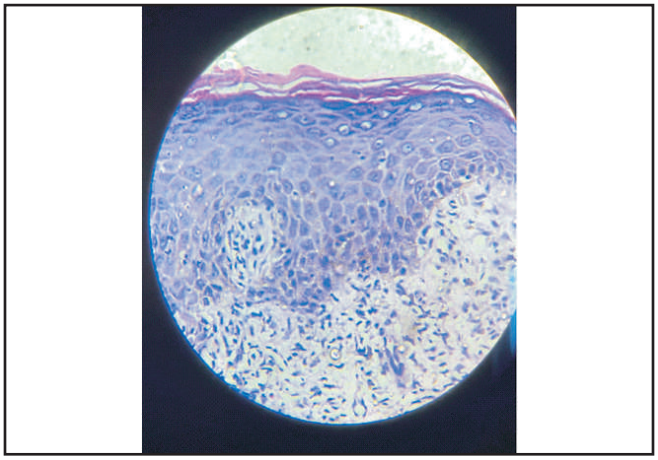


FIGURE-2: Epidermis showing hyperkeratosis irregular acanthosis and mild spongiosis. Superficial dermis with band like lymphocytic infiltrate which shows exocytosis & pigment incontinence in superficial dermis..



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CASE REPORT

Excellent Outcome Of Baby Born In Cowl

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ABSTRACT

The term "collodion baby" refers to a phenotype characterized by a shiny, tight encasing parchment-like membrane, resulting from epidermal developmental dysfunction. The main underlying cause has been implicated as varied icthyosiform disorders. Although spontaneous desquamation may occur within two weeks to three months, it remains a significant cause of acute skin failure attributable to multiple complications like dehydration, electrolyte imbalance, temperature dysregulation and increased risk of sepsis. The high rate of morbidity and mortality render this rare condition a therapeutic challenge. We hereby report a female collodion baby that responded well resulting in good outcome.

Introduction

The term Collodion baby (CB) was first coined by *Hallopeau* in 1884 for newborns covered by a translucent, tight and parchment-like membrane encompassing entire body surface.[1,2] CB is an extremely rare dermatological condition with an estimated incidence of 1 in 50,000 to 100,000 births [3].

Although the collodion membrane is only an evanescent condition of the newborn, neonatal complications can occur in 45% of all collodion babies, with mortality rate of ~11% in the first few weeks of life. Most children born as collodion babies will spontaneously desquamate within 2 weeks, but may require long as three months. Eventually, these children develop signs of one of several types of ichthyosis, which gives the skin the appearance of 'fish scales' [4].

We report a case of a Collodion baby who responded well to emollients and skin care.

Case

A 10 day old female child born out of non-consanguineous marriage was brought by mother with peeling of skin and shiny membrane all over body since birth. Baby had been delivered as full term with low birth weight of 1500 gm. There was no history of birth asphyxia or fever or any skin complaints in other family members. Clinical examination showed diffuse erythema with exfoliation of skin over trunk, upper limb, lower limb, face (Figure 1). Adherent scales over scalp were seen. Ophthalmic evaluation showed bilateral ectropion with sparse eyebrows and eyelashes (Figure 1); anterior segment and fundus were normal. Oral and genital mucosa were unremarkable. No other systemic involvement was noted. Hence, clinical diagnosis of non- bullous congenital icthyosiform erythroderma was made. Child was on adequate breast feeding and supplements and hence was kept under observation considering development of potential complications. The mother was counselled to apply white petroleum jelly twice daily with Clotrimazole 1% cream over flexures and fusidic acid cream over fissures after proper cleaning along with complete avoidance of soaps. Supportive eye care was provided in the form of regular cleaning and instillation of carboxy-methyl-cellulose eye drops. Scalp lesions were dressed with white petrolatum -impregnated gauzes. The baby showed significant improvement over a period of two weeks with gradual regression of erythema and scaling and re-epithelialisation of erosions and fissures (Figure 2). The ectropion resolved with regrowth of eyebrows and eyelashes. She has been followed up for six months without any systemic or cutaneous complications.

Discussion

Collodion baby is inherited primarily as autosomal recessive ichthyosis. A new form of this disorder has been notified as 'self-healing collodion syndrome' in which the newborn completely recovers within few months of birth [5].

These babies are usually prematurely born and diagnosed at the time of birth. The presence of tight membrane may lead to multiple complications like ectropion, eclabium, restricted mobility of extremities

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and digits (due to pseudo-contractures), absence of eyebrows, sparse hairs on head, deformed nose and ears (due to hypoplasia of nasal and ear cartilage).

The underlying etiology in order of frequency, include: Non- bullous congenital ichthyosiform erythroderma (NBCIE), Lamellar ichthyosis (LI) and Harlequin ichthyosis. Other rare causes include Bullous congenital ichthyosiform erythroderma, *Gaucher's* disease and *Sjoögren-Larsson* syndrome [6].

It has been observed that the collodion membrane sheds off in next 2-4 weeks after birth revealing the underlying skin disorder with approximately 75% of collodion baby cases developing ichthyosis (lamellar ichthyosis or congenital ichthyosiform erythroderma)[7].

The exact cause of the CB syndrome is not known but in most cases autosomal recessive inheritance pattern is seen and they are very rare and may be associated with consanguinity. In just 10% of these cases the membrane sheds off leaving underlying skin that remains normal for the rest of the life. 15% cases may demonstrate association with various entities like ichthyosis vulgaris, trichothidystrophy, metabolic and endocrinal disorders which involve keratinization disorders.

Management requires combined effort of dermatologist, neonatologist and in some cases ophthalmologist and oto-rhino-laryngologist. The goal of treatment is to eliminate fish like scales and reduce the excessive irritation. The parents should be counselled and regular follow-up is mandatory.

CB is associated with high risk of dehydration and electrolyte imbalance due to extensive insensible transcutaneous loss leading to hypernatraemic dehydration. This necessitates the patient to be placed under high humified incubators with regular monitoring of the body temperature and proper nutrition.

An increased risk of complications includes cutaneous and systemic infections like candidial and bacterial, fissures, ischemia and oedema of limbs due to membrane compression. The first line of management is liberal use of moisturizers and topical keratolytic agents, which enhance skin barrier function and facilitate desquamation. These infants are at heightened risk of intoxication by absorption of topical products, like salicylates or keratolytics due to impaired barrier function. Ectropion is managed by application of artificial tears and eye lubricants. Retinoids have keratolytic effect and help in elimination of scales. External auditory canal must be regularly cleaned [7].

Figure 1 – Clinical picture showing shiny parchment like membrane over face, upper limb and trunk, bilateral ectropion and sparse eyelashes and eyebrows.

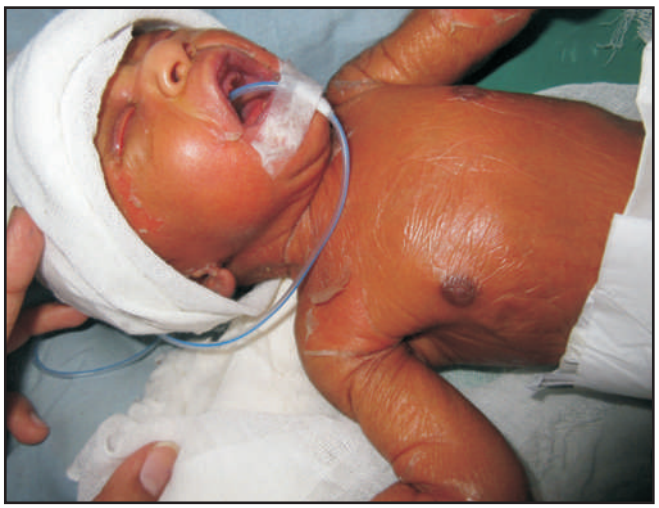
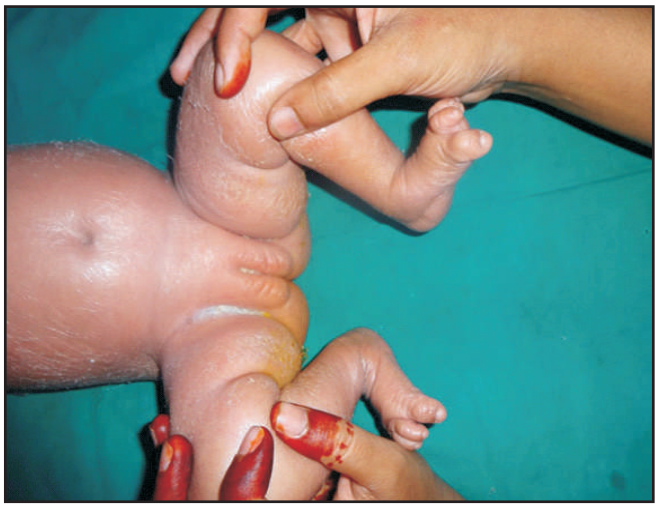


Figure 2 -Clinical picture showing resolving erythema and fissures over intertriginous area.



In addition, since the diagnosis of collodion baby is a clinical one, examining histopathologic features of skin biopsy specimens in the first few weeks will not be useful in differentiating the different types of ichthyosis. Thus, in order to determine the etiologic cause for the collodion membrane, a protocol must be established so

that appropriate measures can be taken months or years following the shedding of the collodion membrane, including a detailed family history, thorough clinical examination, histopathologic examination of skin and appropriate laboratory tests[8].

The management though challenging is mainly supportive like use of incubators and IV fluids and tube feeding and use of emollients. Reassurance to the parents is needed that the newborn can be salvaged with maintenance of fluid and electrolyte balance, nutrition and stringent measures for prevention of infection. Special care to the skin is warranted and collodion membrane should not be peeled off forcibly as it is expected to shed after 1-2 weeks.

Conflict of interest: Nil

Funding Source : None

Conclusion

Though CB is a rare condition, easy to diagnose, our case illustrates that encouraging outcome can be achieved in these vulnerable babies with a simple systematic approach. Early initiation of treatment is indicated to prevent further potential complications. Multidisciplinary approach with proper dermatological intervention is the key to hasten improvement. Regular follow up and counselling of parents is mandatory.

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Medical Journal of Western India

Instructions To The Contributors

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1. Undertaking : The manuscript must be submitted with a statement, signed by all the authors, regarding the originality and authorship. For original article a copy of ethics committee approval should be submitted.

2. **Covering Letter** : It should include name, address, contact details including e-mails and mobile number of the corresponding author.

3. Title page : It should include the title and the names of authors. Surname of authors are to be followed by initials and affiliations. **Title** should be informative, specific and short. The number of authors should not exceed 2 for review article 4 for case report and 6 for original article.

4. Main article : The main article should be drafted as a single microsoft word document elaborating following headings.

a) Abstract and key words : Abstract should not exceed 250 words for original articles and 150 words for case report.

For original article, the abstract must be in a structured form (Objectives, Methods, Results and Conclusion) and explain briefly what was intended, done, observed and concluded. Case report should have sections as: Abstract, Introduction, Case Presentation and Discussion.

b) Key words : Should not exceed 5- 6 words.

c) Manuscript : Manuscript should be typewritten, with wide margin on an A-4 size paper. It should be of 3000-4000 words for review article, 1500 to 2000 for original article and 750 to 1000 for case report.

d) Tables/Figures / Graphs.

i) The tables should appear in the text itself and should be numbered in Roman numbers (Table. I, II etc.)

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e) Photographs:

i) The photographs should be of high definition type with legends. Maximum 4 photographs for original article,2 for case report.

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f) Acknowledgment : Acknowledge only those who have contributed to the scientific content or provided technical support. Sources of financial support if any, should be reported. Conflict of interest should be mentioned.

g) References:

i) The list of references should be in the Vancouver style.

ii) References should be cited in the text in Arabic numbers. E.g Our observations are similar to those of Dowling et al.1.

iii) Maximum number of references: for review articles-40, original articles-20, case reports-06, short communications- 10

Note : 1.Accuracy of the references cited is the sole responsibility of the author/authors.

2. Views expressed by the authors do not necessarily reflect those of the Research society.

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