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EVALUATION OF SERUM GLUCOSE, SODIUM, POTASSIUM AND CALCIUM LEVELS IN NEONATAL BIRTH ASPHYXIA

Anand Pyati, Pradeep Kumar Khanikekar, Dileep B Rathi
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ABSTRACT

Objectives: To assess the serum glucose, sodium, potassium and calcium levels in asphyxiated and normal neonates immediately after birth and to know if any association between the above variables and Apgar score.

Materials and Methods: 50 neonatal birth asphyxia cases with Apgar scores ≤7 at 5 minutes of birth were included. 50 term non-asphyxiated neonates with 5 minutes Apgar score of ≥7 served as control group. In all the cases and controls, serum glucose was estimated by Glucose Oxidase – Peroxidase method and the serum sodium, potassium and calcium levels were estimated by Ion selective electrode method.

Results: The statistical analysis by student’s t-test showed that the serum levels of glucose, sodium, calcium levels were significantly decreased in cases when compared to controls. There was no significant difference in the levels of potassium between the cases and controls. Serum glucose, sodium and calcium levels are positively correlated with Apgar score in cases. All the above analysis was statistically significant (p < 0.05).

Conclusion: Neonatal birth asphyxia is directly associated with low serum levels of glucose, sodium and calcium with very little increase of potassium levels. The analysis of serum levels of glucose and electrolytes in the early stages will help for better care of neonates with birth asphyxia.

INTRODUCTION

Birth asphyxia is defined by World Health Organization as “the failure to establish breathing at birth” 1. Asphyxia is a condition of insufficient oxygen supply which can lead to severe hypoxia ischemic organ damage in neonatal newborns followed by a fatal
Throughout the world, Birth asphyxia poses a severe clinical problem. Globally, hypoxia of the new born is estimated to account for 23% of the 4 million neonatal deaths and 26% of the 3.2 million still births each year. Chronic neuro-developmental morbidities, including cerebral palsy, mental retardation, learning disabilities are being suffered by approximately 1 million children who survive birth asphyxia. Birth asphyxia is one of the most common primary cause of mortality (28.8%) and morbidity among neonates in India and is the commonest cause of stillbirth (45.5%). An Apgar score of less than 7 at one minute and at 5 minutes respectively is seen in 8.4% and 2.45% cases in India.

The severity of the asphyxia is assessed based on the Apgar score. The Apgar score uses five criteria: Appearance, Pulse, Grimace, Activity, and Respiration, shortly APGAR. Ranging from 0-10 the scores below 3 are considered as critically low for the cases of highest emergency, 4-6 –as fairly low, and the scores equal to or more than 7 correspond generally to normal states of newborns health.

Sodium, potassium and calcium are the major electrolytes in human body, and any deviation from their normal levels in blood might cause convulsions, shock and other types of metabolic abnormalities. Calcium is an important second messenger in our body and also helps carrying out muscle function and acts as cofactor for several enzymatic activities. Body should maintain optimum level of these electrolytes in blood.

The transition from fetal to newborn life is associated with major changes in water and electrolyte homeostatic control. Before birth, the fetus has a constant supply of water and electrolytes from the mother across the placenta; fetal water and electrolyte homeostasis is largely a function of placental and maternal homeostatic mechanisms. After birth, the newborn must rapidly take over the responsibility for its own fluid and electrolyte homeostasis in such an environment in which the fluid and electrolyte availability and losses fluctuate much more extensively than in utero. Hence, because of the newborn’s small size, relatively small absolute changes in electrolytic quantities represent large proportionate changes for a neonate. A physiologic transient increase in serum potassium and transient decreases in plasma glucose, serum sodium and serum calcium concentrations must be taken into account.
So the present study was undertaken to assess the glucose and electrolyte levels in neonatal birth asphyxia cases immediately after birth and to know if any association between the above variables and the Apgar score.

**OBJECTIVES**

1. To study the serum glucose, sodium, potassium and calcium levels in asphyxiated newborns and compare with controls

2. To find out any correlation between serum glucose, sodium, potassium and calcium levels with Apgar score.

**MATERIALS AND METHODS**

The present study was carried out in the department of Biochemistry, in collaboration with the department of Obstetrics and Gynaecology and department of Paediatrics, BLDEU’s Shri B M Patil Medical College, Hospital and Research Centre, Bijapur, Karnataka, during the period from June 2011 to March 2013. A total of 100 newborn babies comprising 50 neonatal birth asphyxia cases and 50 healthy newborn babies were included in the study. The study was approved by Institutional Ethical Clearance Committee and informed consent was taken from the parents of each newborn.

All deliveries were conducted by trained obstetricians in the presence of a paediatrician well versed in the art of resuscitation. Both cases and controls were full-term newborn babies of 2.5 kg or more. Cases had Apgar scores less than 7 and controls were with Apgar scores 7 or more at 5 minutes of birth. Babies with congenital malformations, suspected metabolic disease, treated with diuretics and those born to mothers having hypertension, diabetes mellitus, toxemia of pregnancy, receiving general anesthesia, Pethidine, phenobarbitone, magnesium sulphate and other drugs likely to cause depression in babies, and mother with history of febrile attack within 2 weeks before delivery were excluded from the study. 50 term non-asphyxiated neonates with 5 minutes Apgar score of 7 or more served as control group.

About 3 ml of blood was collected during the delivery of all the babies in the labour room under all aseptic precautions in a sterile plain bulb. The blood was allowed to clot for about 30 minutes and then the serum was separated by centrifugation at 5000 rpm and
kept at 4°C until analysis was carried out. The following investigations were carried out:

1. Serum Glucose: Glucose oxidase – Peroxidase (GOD-POD) method.
2. Serum Sodium: Ion selective electrode (ISE) method
3. Serum Potassium: Ion selective electrode (ISE) method
4. Serum Calcium: Ion selective electrode (ISE) method

**OBSERVATIONS AND RESULTS**

**Statistical Analysis:**

Descriptive data is presented as mean ± SD and range values. Differences between means of two groups are assessed with the Student t test. The Pearson’s correlation coefficient is used to evaluate the degree of association between two variables. For all the tests, p-value of 0.05 or less is considered for statistical significance.

Table 1: Comparison of Apgar score and serum Levels of Glucose, Sodium, Potassium and Calcium in Neonatal Birth Asphyxia Cases and Controls

<table>
<thead>
<tr>
<th></th>
<th>Cases (n=50) Mean ± SD</th>
<th>Controls (n=50) Mean ± SD</th>
<th>P value</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apgar score</td>
<td>4.4 ± 1.03</td>
<td>7.9 ± 0.99</td>
<td>&lt; 0.05</td>
<td>Significant</td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>35.03 ± 4.14</td>
<td>83.4 ± 23.8</td>
<td>&lt; 0.05</td>
<td>Significant</td>
</tr>
<tr>
<td>Sodium (mEq/L)</td>
<td>133.3 ± 8.6</td>
<td>138.3 ± 6.7</td>
<td>&lt; 0.05</td>
<td>Significant</td>
</tr>
<tr>
<td>Potassium (mEq/L)</td>
<td>4.7 ± 0.6</td>
<td>4.6 ± 0.7</td>
<td>&gt; 0.05</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Calcium (mg/dL)</td>
<td>8.5 ± 1.6</td>
<td>9.6 ± 2.2</td>
<td>&lt; 0.05</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Table 1 shows comparative analysis of Apgar score, serum Glucose, Sodium, Potassium, and Calcium levels between neonatal birth asphyxia cases and healthy neonates.

The statistical analysis by student’s t-test shows that the levels of serum glucose, sodium, calcium levels are significantly decreased in neonatal birth asphyxia cases when compared to healthy neonates. This difference was statistically significant (p<0.05). There was no significant difference in the levels of serum potassium between the cases and controls.
Table 2: Relationship of Serum Glucose, Sodium, Potassium and Calcium Levels with Apgar Score In Cases And Controls

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cases ‘R’ value</th>
<th>Controls ‘R’ value</th>
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</thead>
<tbody>
<tr>
<td>Glucose</td>
<td>0.2</td>
<td>0.14</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.05</td>
<td>0.32</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.10</td>
<td>-0.18</td>
</tr>
<tr>
<td>Calcium</td>
<td>0.005</td>
<td>0.025</td>
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R= Pearson’s correlation coefficient

Table 2 shows the Pearson’s correlation between Apgar score and serum levels of glucose, sodium, potassium, and calcium in cases of neonatal birth asphyxia and healthy controls.

It is evident from the table that serum glucose, sodium and calcium levels are positively correlated with Apgar score in neonatal birth asphyxia cases. As the concentrations of serum glucose, sodium and calcium decrease there is simultaneous decrease in Apgar score and this correlation is statistically significant (p < 0.05).

**DISCUSSION**

In the present study, serum glucose levels are significantly decreased in neonatal birth asphyxia cases when compared to controls. 43.3% of cases were having hypoglycemia. Serum glucose levels are positively correlated with Apgar score in neonatal birth asphyxia cases. These findings are in accordance with Basu P et al, Kumar A et al and Sasidharan CK et al.

Before birth, fetal glucose concentration is slightly higher than that of the mother. With cord clamping, neonatal plasma glucose concentration plummets over the first 60–90 min of life. Ogata notes in his research that the changes in counter regulatory hormones and insulin shall result in mobilization of glucose and fat and stimulate gluconeogenesis. The neonates with birth asphyxia and having hypoglycemia may have an impaired gluconeogenesis, as gluconeogenesis maintains the blood glucose levels. These changes increase endogenous glucose production, and plasma glucose concentration rises and subsequently stabilizes. Premature infants and growth-retarded infants are at risk.
for hypoglycemia because their hepatic glycogen stores are limited. Perinatal stress is associated with neonatal hypoglycemia in part because of catecholamine stimulated mobilization and depletion of glycogen stores. Infants of diabetic mothers are at risk for hypoglycemia in spite of increased glycogen and fat stores as the result of hyperinsulinism.

Serum sodium levels are significantly decreased in neonatal birth asphyxia cases when compared to controls. 53.3% of cases were having hyponatremia. Serum sodium levels are positively correlated with Apgar score in neonatal birth asphyxia cases. These findings are in accordance with the studies of Basu P et al., Kumar A et al. and Gupta et al. Neonates with birth asphyxia may have hyponatremia due to fluid overload as a result of renal compromise, or due to inappropriate secretion of antidiuretic hormone. Gupta et al. further mentions that there was no major variance in serum potassium levels in cases and controls.

There was a small increase in serum mean potassium levels in neonatal birth asphyxia cases when compared to controls. But this difference is statistically insignificant. These findings are in agreement with the studies of Basu P et al. and Kumar A et al. The most probable reason for the high cord blood potassium value is the acute acidosis caused at birth by transient anoxia. This causes an exchange transfer of H+ ions from plasma with K+ ions of the intracellular fluid of the RBC. Other writers have found levels in the cord blood both higher than ours, e.g. Widdowson and McCance (1956) 8.0 mg., Oliver, Demis, and Bates (1961) 9.1 mg.; and lower, e.g. Earle, Bakwin, and Hirsch (1951) 4.98 mg., Oberman, Gregory, Burke, Ross, and Rice (1956) 5.0 mg.

Serum calcium levels are significantly decreased in neonatal birth asphyxia cases when compared to controls. 23.3% of cases were having hypocalcemia. Serum calcium levels are positively correlated with Apgar score in neonatal birth asphyxia cases. These findings are in accordance with the studies of Basu P et al., Kumar A et al., Jain BK et al., and Cockburn F et al. With the abrupt termination of calcium transport across the placenta at delivery, plasma calcium falls, reaching a nadir at age 24–48 h. Serum parathyroid hormone (PTH) increases postnatally in response to this fall in plasma calcium concentration. Clinically significant hypocalcemia occurs, asphyxiated newborns. The etiology in all these circumstances is a sluggish response in PTH secretion to the postnatal fall in plasma calcium concentration.
CONCLUSION

Neonatal birth asphyxia is directly associated with the low serum levels of glucose, sodium and calcium in neonates. The serum levels of potassium increased very little in neonates having birth asphyxia. This change in the serum level of potassium did not have significant difference in statistical analysis. The deficits in sodium, calcium and glucose require immediate medical care to alleviate the effect and save the neonate from severe brain damage or even death. The study reveals that the analysis of serum levels of glucose, sodium and calcium in the early stages will help provide better care for the neonates with birth asphyxia.

REFERENCES


STUDY OF MASTOID CANALS AND GROOVES IN NORTH KARNATAKA HUMAN SKULLS

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ABSTRACT

Introduction: This study was undertaken to observe the frequency of mastoid canals and grooves in north Karnataka dry human skulls. 100 dry human skulls of unknown age and sex from the department of Anatomy were selected and observed for the present study.

Material and Methods: The mastoid regions of dry skulls were observed for the presence of mastoid canals and grooves, if any. A metallic wire was passed through the canal for its confirmation and then the length was measured.

Results: The Mastoid canals were present in 53% of the total 100 skulls observed either bilaterally or unilaterally. Mastoid grooves were present in 18% of the total skulls (100) observed. Double mastoid canal was found in 01% of total skull studied and both Mastoid canals & Mastoid grooves together were present in 02% of the total skulls (100) observed.

Conclusion: The knowledge of mastoid canals and grooves is very important for otolaryngologists and neurosurgeons. Because they contain an arterial branch of occipital artery with its accompanying vein which is liable to injury resulting into severe bleeding.

KEY WORDS: Mastoid Canal, Mastoid Groove, Occipital Artery.

INTRODUCTION

Mastoid canals are the canals formed in the mastoid region of temporal bone of skull, located in the outer surface of mastoid processes, located posterior and parallel to the petrosquamous suture, anterior to the occipitomastoid suture and anteroinferior to the asterion. Perforated lateral wall of mastoid canals are called as mastoid grooves. Some of
the authors have mentioned that there are blood vessels lying in this area\(^1\&^2\). Hollinshead (1982) described an ascending or auricular branch of the occipital artery at this site\(^2\). These vascular canals and grooves are of varying caliber and length, have not been described in any of the text books of Anatomy, though these are of significant importance for neurosurgeons and otolaryngologists.

**MATERIAL AND METHODS**

The study was undertaken to observe the frequency of mastoid canals and grooves in north Karnataka dry human skulls. 100 dry human skulls of unknown age and sex from the department of Anatomy Shri B M Patil Medical College BLDE University Bijapur were selected and observed for the present study. The mastoid regions of dry skulls were observed for the presence of mastoid canals and grooves, if any. A metallic wire was passed through the canal for its confirmation and then the length of mastoid canal and groove was measured. In some of the skulls Grooves led to the openings of the canals.

Only those skulls which had Canals patent to metal wire were considered as possessing mastoid canals. The length of the canal was measured with the help of thread by passing metal wire. The diameter of the mastoid canal was able to measure in only few skulls where mastoid canal is larger, but in most of the skulls it was unable to measure the diameter. Length of the mastoid grooves was measured with the help of thread.

**RESULTS**

The Mastoid canals of varying length were present in 53(53%) of the total 100 skulls observed either bilaterally or unilaterally (fig-1&2). Of the 53 skulls possessing mastoid canals 14(14%) were bilateral, 36(36%) were unilateral, 02(2%) were both Mastoid canal & groove together (fig-3) and in 01(01%) was double mastoid canal (fig-4). Of the 36(36%) of the unilateral canals, 20(20%) were on the left and 16(16%) on the right side. Mastoid grooves were present in 18(18%) of the total skulls (100) observed. Of the 18 skulls possessing mastoid grooves 03(3%) were bilateral 15(15%) were unilateral. Of the 15 skulls of unilateral 06(6%) were on the right side and 09(9%) was in left side (Table-1). The distance between the 2 openings of mastoid canal ranged from 1 to 31 mm. The length of mastoid grooves ranged from 9 to 21 mm. The diameter of the mastoid canal was measured; diameter was less than 5mm in most of the skulls.
The knowledge of mastoid canals and grooves is very important for otolaryngologists and neurosurgeons. Because they contain an arterial branch of occipital artery with its accompanying vein which is liable to injury resulting into severe bleeding.

**DISCUSSION**

In the earlier study by Choudary et al it has already proved that the presence of mastoid canals in Indian Human skulls. Singh M has proved the presence of mastoid canals and mastoid grooves in Japanese skulls, the percentage frequency of mastoid canals in Japanese population is observed to be higher than in Indian population. Another study by Hussain et al showed the presence of mastoid canals and mastoid grooves in south Indian skulls. Present study reveals percentage frequency of mastoid canals in north Karnataka population is observed to be higher than in Japanese population.

Warwick et al reported two occipital branches of the occipital artery at this site. In the present study it’s also reported the presence of double mastoid canals in one region and presence of mastoid canal and groove together in one side; this indicates presence of two branches of occipital artery at this site, this gives support to the study by Warwick et al.

Percentage frequency of mastoid grooves in North Karnataka population is observed to be higher than in Japanese population (Table No-2).

Mastoid canals containing vessels may be attributable to the mode of development of this part of the temporal bone. In the embryo the bone develops from two components. The squamous part arises in mesenchyme at 8th week of fetal life and forms the anterosuperior part. The petro mastoid part develops from the cartilaginous epiotic centre at 5-6th months of fetal life and forms the posterooinferior part by 1 year of age. These are demarcated on the external surface as the petrosquamous suture, directed downwards and forwards into the mastoid process. In the adult skull this may barely be distinguishable or is seen as series of irregular depressions or well marked fissures. The squamous plate grows posterior and covers a large area of the lateral surface of the petro mastoid bone. The ‘junction’ between these two components of the temporal bone in many adults is often separated by a heavy plate of bone referred to as Korner’s septum or a ‘false bottom’ and is a remnant of the suture. The ascending branch of the occipital artery lying on the developing petromastoid in fetal life is likely to be buried by the ossifying squamotemporal bone. In
other words, this ascending branch of the artery in some skulls is ‘trapped’ between two growing bones.

Since the presence of artery and its accompanying vein in this region is liable to injury as it may be undetected, it is necessary for surgeons operating in this area to be aware of this vascular arrangement to avoid troublesome bleeding. The importance of structures in the mastoid area has increased due to the increasing use of the transtemporal route for surgical procedures involving access to structures in the posterior fossa and the mastoid air system by neurosurgeons and otolaryngologists.

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MORPHOLOGICAL VARIATIONS OF LUMBRICAL MUSCLES IN HAND: A CADAVERIC STUDY

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ABSTRACT

The lumbrical muscle constitutes an important part of the intrinsic musculature of the hand the muscles have movable origin arising from the tendon of flexor digitorum profundus. The lumbrical muscles are unique in having their origin and insertion on tendons the articular system in the digits is connected by mechanical links and lumbrical muscle is one of the links of this system that produces dynamic controlled extension of interphalangeal joints and helps in delicate digital movements. A study was conducted in the department of Anatomy, BLDEU Sri B M Patil Medical College Bijapur with 102 specimens of hands of both the sexes. The study was carried out to check for the variations in the origin, insertion, innervations and the extension of lumbrical muscle. 87.25% of case showed the normal morphology of lumbricals and remaining showed the variations like bifid, bipennate, hypertrophied and split insertion. The knowledge of these muscle variations is of importance during diagnosis and treatment of carpal tunnel syndrome, hand surgery, and some plastic surgery procedures.

KEYWORDS: Lumbricals, flexor digitorum profundus, carpal tunnel, split insertions

INTRODUCTION

The lumbrical muscle is so named because it resembles the size, shape and colour of an earth worm compared to their size they play very significant role in dynamics of the intricate movements of the fingers required for the precise work. Lumbricals are described as work horse of the extensor apparatus, the only muscle in the body that is
able to relax the tendon of its own antagonists the lumbricals are small fasciculi which arise from the tendon of the flexor digitorum profundus. First and second arise from radial side and palmar surface of the tendon of index and middle finger. Third lumbrical arises from adjacent sides of the tendon of middle and ring fingers. Fourth lumbrical arises from adjacent side’s tendons ring and little fingers. Each lumbrical passed to the radial side of the corresponding finger and is attached to lateral margin of dorsal digital expansion as distal wing tendon. Indeed the lumbricals of the hand by producing flexion at the metacarpophalangeal joints and extension at the inter-phalangeal joints helps in various skills like writing, stitching and painting any other forms of precision work. Lumbricals play a vital role in precision movements of the hand. There exists an articular system in fingers in which there are two sets of three longitudinal bones linked by two joints. Each of these two systems has a mechanical link that, passing from the flexor to the extensor side of finger, plays an important role in extension of the digits. The lumbrical muscles are the link of the proximal system and provide dynamic controlled extension of the interphalangeal joints.

METHODS

This study on the lumbricals was performed on 102 human hands of embalmed donated cadavers in the department of Anatomy BLDEU Sri B M Patil Medical College Bijapur, Karnataka. The dissection of the palm was done meticulously to expose all the tendons of flexor digitorum superficialis and flexor digitorum profundus. The dissection was carried out according to the Cunningham’s manual of practical anatomy. A longitudinal incision was taken from the distal end of the flexor retinaculum, up to the level of the metacarpophalangeal joint of the middle finger. The skin, the superficial fascia, the deep fascia and the flexor retinaculum were dissected and reflected. Then, the palmar aponeurosis and the slips which pass from its distal margin to each of the fingers was dissected and reflected. Then, the tendons of the flexor digitorum superficialis and the flexor digitorum profundus were reflected distally. The lumbrical muscles which were situated at the distal end of the flexor digitorum profundus tendons were carefully observed. The lumbrical muscles were followed to their tendons which pass with the proper digital vessels and nerves to the lateral side of the base of each finger and later, the tendons of each of the lumbrical muscles were traced up to their insertion. The study was carried out to check for the variations in the origin, insertion, innervations and the extension of lumbrical muscles.
RESULTS

Out of 102 specimens the variations were observed in 13 specimens. Out of 13 variant specimens a rare accessory belly of second lumbrical was observed originating from the ulnar side of the 1st tendon of the flexor digitorum profundus going to the Dorsal Digital expansion (DDE) of the middle finger (Figure-3) and in 3 specimens the bipennate second lumbrical muscle originating from the ulnar side of the 2nd long tendon of the flexor digitorum profundus going to the dorsal digital expansion (DDE) of the middle finger was observed (Figure-1). In single specimen the bifid origin of 1st lumbrical was observed (Figure 2) and proximal origin of 1st lumbrical was observed in two specimens. The percentage of split insertion of 3rd and 4th lumbrical muscle was quite higher in our study (Figure 5&6). And very rare occurrence of abnormal insertion of the 4th lumbrical to the ulnar side of the dorsal digital expansion of the middle finger was observed in 1 specimen (Figure-4) there were no associated neurovascular variations seen. All the variations were unilateral.

<table>
<thead>
<tr>
<th>Pattern</th>
<th>No of cases</th>
<th>Percentage of their incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal origin</td>
<td>89</td>
<td>87.25%</td>
</tr>
<tr>
<td>Bifid origin</td>
<td>01</td>
<td>0.98%</td>
</tr>
<tr>
<td>Bipennate</td>
<td>03</td>
<td>2.9%</td>
</tr>
<tr>
<td>Hypertrophied</td>
<td>02</td>
<td>1.9%</td>
</tr>
<tr>
<td>Proximal origin</td>
<td>02</td>
<td>1.9%</td>
</tr>
<tr>
<td>Additional head</td>
<td>01</td>
<td>0.9%</td>
</tr>
<tr>
<td>Split insertion</td>
<td>03</td>
<td>2.9%</td>
</tr>
<tr>
<td>Abnormal insertion</td>
<td>01</td>
<td>0.98%</td>
</tr>
</tbody>
</table>

From the data of our present study, lumbricals with their normal attachments were observed in majority (87.25%) of palms. However, significant variations were also observed in some of the palms such as its split insertion, additional head, and proximal origin beneath the flexor retinaculum in 12.07% cases
Figure 1: Showing the Percentage of Variation of Lumbricals In Hand

Figure 2: Dissection of Palm Showing hypertrophied 1\textsuperscript{st} lumbral & Bipennate 2\textsuperscript{nd} Lumbral with (Arrow), TM-Thenar Muscle, HTM- Hypothenar Muscle, MN-Median Nerve and long flexor tendons
Figure 3. Dissection of hand showing bifid 1st lumbrical from flexor digitorum profundus (FDP) TM: Thenar muscles HTM: Hypothenar muscles

Figure 4. Dissection of Hand Showing *additional belly of 2nd Lumbrical TM-Thenar Muscle HTM- LFT- long flexor tendons

Figure 5. Dissection of Hand showing abnormal insertion of 4th Lumbrical to the dorsal digital expansion of ring finger, TM-Thenar Muscle HTM- LFT- long flexor tendons
DISCUSSION

Much of the versatility of the human hand depends upon its intrinsic musculature. The lumbrical muscles constitute an important part of the intrinsic musculature of the hand. Lumbricals as a part of the intrinsic musculature are important for its delicate digital movements. Variations in the origin and insertion of the lumbricals are common. Lumbricals are quite unique as they connect the flexors of the digits to the extensors and that both of their attachments are mobile. The articular system in the digits is connected by mechanical links and lumbrical muscle is one of the links of this system that produces dynamic controlled extension of interphalangeal joints. The lumbricals assist in metacarpophalangeal joint flexion; they contribute to interphalangeal joint extension by acting as deflexors of the proximal interphalangeal joint. Anatomically, they are highly specialized in terms of their architectural properties, with a small physiologic cross-sectional area but long fiber length. Their unique properties indicate that they are probably
important in fast, alternating movements and fine-tuning digit motion. Anomalous and additional lumbrical muscle can cause carpal tunnel syndrome by compressing the median nerve. Many cases of the unusual muscle belly which appears in the carpal tunnel have been reported clinically as a cause of CTS, a condition which occurs when the muscle belly compresses the median nerve. Anomalous and additional lumbrical muscle as a cause of carpal tunnel syndrome has been reported in literature.

Similar observation was seen in a study done by as a bipennate origin of first lumbrical, extending from the distal part of forearm and had split insertion. Additional lumbricals occurring more frequently than a reduction in their number. Origin of lumbricals may be displaced proximally arising from flexor retinaculum, flexor digitorum superficialis, flexor digitorum profundus or flexor pollicis longus. Accessory belly of first lumbrical may arise from flexor pollicis longus, flexor digitorum superficialis, first metacarpal, opponens pollicis or palmar carpal ligament. Present study shows accessory belly in second lumbrical.

In the present series first lumbrical, in all cases, was unipennate; whereas in 45%, the second lumbrical was bipennate. All the third and the fourth lumbricals were found to be bipennate. The present study showed the presence of bipennate second lumbrical in 2.9% of the cases. The significance and etiology of such variant lumbrical was not found in literature. If the first lumbrical is bipennate instead of unipennate then two heads usually arise from the flexor digitorum profundus and flexor pollicis longus. In the present study most of the lumbricals had a normal origin but some (1.98%) showed a proximal anomalous origin beneath the flexor retinaculum. Similar report has been reported by a study done by with the incidence of 26.6% and opined that, it may cause compression of median nerve in carpal tunnel. Lumbricals often show split insertions. from his study, reported fairly numerous instances in which a lumbrical tendon split to go to the adjacent sides of the two fingers, or less frequently inserted entirely on the ulnar side of the adjacent digit. Split insertion of second lumbrical though rare has been reported by some workers. reported only 1 split insertion, out of 72 hands. Similarly have also reported split insertion of second lumbrical in 1 out of 75 hands. But, have reported 100% normal insertion of second lumbricals. In our study we found split insertions in three hands.
CONCLUSION

In the present study, though we observed presence of lumbricals with their normal attachment and morphology in majority of cases, few rare variations like accessory belly hypertrophied and proximal origin. The knowledge of these muscle variations is of importance during diagnosis and treatment of carpal tunnel syndrome, hand surgery, and some plastic surgery procedures.

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PRE-INVASIVE OCULAR SURFACE SQUAMOUS NEOPLASIA: A CASE REPORT

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ABSTRACT

Objective: To report a case of pre-invasive OSSN and its management. Method: A 72 year old male patient presented to opd with growth in his left eye since 2 months. Pre-operative examination: Left eye 4×5 mm measuring pigmented, lobulated mass at limbus extending from 2 to 4 o clock position with a feeder vessel, showed no scleral induration. Visual acuity- 6/18, pinhole-6/9. Impression cytology revealed the mass to be highly suspicious of squamous cell carcinoma. Result: Case was managed with surgical excision of the entire mass including 2mm of surrounding healthy tissue, under operating microscope. Specimen was subjected for histopathological examination. Histopathology showed features of carcinoma in situ. 9 months follow up showed healing of the excised area and no signs of recurrence. Conclusion: Squamous lesions of the cornea and conjunctiva are rare but demand timely diagnosis and treatment, due to their potential for visual loss and systemic morbidity and mortality.

INTRODUCTION

Ocular surface squamous neoplasia (OSSN) is a disease of the elderly, having predilection for the interpalpebral are mostly the corneoscleral limbus in 87.8% of cases. Management can be either surgical or by topical mitomycin C (MMC) drops. We report a case of pre-invasive OSSN in which the limbus was involved in an elderly adult.

CASE REPORT

A 72 year old male patient presented to ophthalmology opd with growth in his left eye since 2 months. The growth was insidious in onset which slowly progressed from an
initial size of 2x2 mm to the current size of 4x5mm in 2 months. There was no history of trauma.

**Pre-operative ocular examination:** Left eye 4×5 mm measuring mass at limbus extending from 2 to 4 o’clock position involving 1mm of cornea with a feeder vessel. The mass was pigmented, lobulated showed no scleral induration. The patient had grade 2 nasal pterygium. Visual acuity- 6/18, pinhole-6/9. Impression cytology revealed the mass to be highly suspicious of squamous cell carcinoma.

**Investigations:** Impression cytology revealed features highly suspicious of squamous cell carcinoma. RBS-123g/dl, Haemoglobin-13.4gm%. HIV-negative, HbSAg-negative.

**Histopathology.**

**Management:** The patient was managed surgically. Under peribulbar anaesthesia surgical excision of the entire mass including 2mm of surrounding healthy tissue was done under an operating microscope. The excised mass was subjected to histopathological examination. Histopathology showed features of carcinoma in situ. At the 9 month follow up the patient presented no symptoms and no signs of recurrence.

**DISCUSSION**

Corneal and conjunctival squamous lesions are uncommon but important because of their potential for causing ocular and even systemic morbidity and mortality. OSSN is uncommon and it primarily occurs in older males (78.5%). The incidence is between 0.13 to 1.9/100000. The average age of occurrence has been noted to be 60 years, ranging from 20 to 88 years. The clinical presentation varies from mild to severe dysplasia to full-thickness epithelial dysplasia (carcinoma in situ) and invasive squamous cell carcinoma.

Ocular Surface Squamous Neoplasia (OSSN) was a term given by Lee and Hirst, which has three grades:

- Benign dysplasia
  - Papilloma
  - Pseudotheliomatous hyperplasia
  - Benign hereditary intraepithelial dyskeratosis
Preinvasive OSSN

- Conjunctival/corneal carcinoma in situ

Invasive OSSN

- Squamous carcinoma
- Mucoepidermoid carcinoma

Etiopathogenesis:

1. Ultraviolet-B light - UV-B light causes DNA damage and formation of pyrimidine dimers. UV-B has also been shown to cause p53 gene mutation, which is associated with OSSN.⁴

2. Human Papilloma Virus - HPV genotypes 6 and 11.⁵

3. Risk factors include chemical exposure (trifluridine, beryllium, arsenicals, petroleum products), cigarette smoking, vitamin A deficiency, and viruses like herpes simplex virus (HSV) type I.

The differential diagnosis of OSSN includes: Pannus, Actinic disease, Vitamin A deficiency, Benign intraepithelial dyskeratosis, Pinguecula, Pterygium, Pyogenic granuloma, Keratoacanthoma, Pseudoepitheliomatous hyperplasia, Malignant melanoma and nevi.


Treatment: Surgical excision- Complete excision with adequate margins. Cryotherapy. Radiotherapy. -90 (beta irradiation) and radium (gamma radiation) are used. Chemotherapy⁶ - Mitomycin C,⁷ Fluorouracil are used. Immunotherapy - Interferon alpha2b (INF-a2b), Pegylated Interferon Alpha 2b can be used.⁸

Recurrence: Recurrence rates of OSSN ranges from 15-52%, average reported being 30%. Recurrences are higher in case of inadequate excision margins, and occur usually within two years of surgery. The main predictors for recurrence include age, histological grade of the lesion, adequacy of margins at initial excision, corneal location, larger size
Immunostaining with antibody to Ki-67, which is a nuclear antigen expressed in proliferating cells, allows evaluation of the growth fraction of normal and neoplastic cells yielding the proliferation index.

**CONCLUSION**

Squamous lesions of the cornea and conjunctiva are rare but demand timely diagnosis and treatment, due to their potential for visual loss and systemic morbidity and mortality.

**REFERENCES**

LAMELLAR ICHTYSOSIS WITH SEVER CICATRICALECTROPION: A CASE REPORT

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ABSTRACT:

Ichthyosis is an infrequent clinical entity worldwide (1:300,000 births). When diagnosed in a newborn, two forms can be identified: collodion baby and its most severe form, harlequin fetus or malignakeratoma. In both cases, clinical presentations are, thick and hard skin with deep splits. The splits are more prominent in the flexion areas. We report a case of a 3 year old boy with scaling of skin, scales over lid and eye lashes, severe cictricialectropion (grade 3) of all lids. Present case illustrates the severity of ectropion in lamellar ichthyosis and the importance of proper treatment to prevent exposure keratopathy.

KEYWORDS: Lamellar ichthyosis, bilateralectropion

INTRODUCTION:

The word ichthyosis is derived from a Greek word ‘ikthus’ meaning fish. Ichthyosiform dermatosis, are a group of hereditary disorders characterised by dryness and roughness of the skin with excessive accumulation of epidermal scales. Lamellar ichthyosis, is one of the rare congenital ichthyosiform dermatoses\(^1\). The characteristic feature of the disease is a thin, dry, shining, brownish-yellow parchment-like membrane which completely envelopes the newborn. This gives a collodion or “backed apple” look to the newborn and such children are called “collodion babies”.

This condition was first described by Seelingman in 1841. Ballantyne was the first author to make an extensive report on 33 cases. Till 1968 a total of 103 cases had been reported in literature across the globe\(^2\).
We are reporting a case of lamellar ichthyosis, with bilateral ectropion of the eye lids in addition to the generalised involvement of the body surface by a membrane.

CASE PRESENTATION

A 3 year old boy presented to ophthalmology OPD with scaling of skin, scales over lid and eye lashes, severe cictricialectropion (grade 3) of all lids (Image:1). Ocular examination revealed conjunctival involvement with exposed conjunctival congestion and papillary reaction, clear cornea, clear lens. Fundus examination was within normal limits. On systemic examination child was malnourished weighing 8.6 Kg, mild pyoderma of scalp, generalized large polygonal plate armour like dark brown coloured scales attached at center, free at periphery, all over the body. History revealed, 2nd degree consanguineous marriage, second female child was not affected. Patient was treated with hydroxypropyl methyl cellulose eyeointment BD application, was advised eye patching in the night.

Figure 1: Clinical presentation

In recent follow up after 6 month there was decrease in the degree of ectropion, conjunctival congestion and papillary reaction had decreased (Image: 2). Further complications of exposure keratopathy and dry eye were prevented.
DISCUSSION:

Bilateral cicatricial ectropion is most common presentation in lamellar ichthyosis (33%). One-third of the children develop bilateral cicatricial ectropion due to excessive dryness of the skin and subsequent contracture. Secondary corneal ulceration may occur due to exposure. Lamellar ichthyosis is known to be an inherited autosomal recessive disorder, 8% of such cases gives a history of consanguinity. The disease is reported to be two times more common in males. Almost 25% of such children born premature and 51% have similarly affected siblings. Although 80% patients show a generalised involvement, others have the disease limited either to the trunk or one or two extremities. Flexor aspects of the body are most severely affected. The other reported associations of the disease are bilateral ectropion (33%), diminished or absent sweating (10%), nail dystrophies (less than 5%) and seasonal recurrence of the dermatosis in summer (15%). These children are extra susceptible to systemic infection. Alternate formation and shedding of scales on the skin from time to time has been described. The histopathology has been discussed and marked hyperkeratosis, normal to thickened granular layer on occasion prominent rete ridges was found. Follicular orifices are filled with keratin and hair follicles and sebaceous glands are smaller.
than normal. There is universal agreement regarding management of such cases with plain ointments, keratolytic preparations and in severe cases administration of systemic and topical corticosteroids.

Present case illustrates the severity of ectropion in lamellar ichthyosis and the importance of proper treatment to prevent exposure keratopathy. Early treatment may also prevent ectropion progress.

REFERENCES:

A CASE OF EPISTAXIS MANAGED BY ENDOSCOPIC SPHENOPALATINE ARTERY CAUTERISATION

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ABSTRACT

Epistaxis is defined as acute hemorrhage from the nostril, nasopharynx or nasal cavity. The major blood supply to the nasal cavity is by sphenopalatine artery and is more commonly involved in epistaxis. So it is called artery of epistaxis. Younger individuals below the age of 40 years usually bleed from anterior aspect of nose. People above this age bleed commonly from the posterior aspect of nasal cavity. Herein, we report a case of posterior epistaxis in a 22 year old male which was managed with endoscopic sphenopalatine cauterization.

KEY WORDS: Epistaxis, alcohol, posterior epistaxis, endoscopic ligation of sphenopalatine artery

INTRODUCTION

Epistaxis is defined as acute hemorrhage from the nostril, nasopharynx or nasal cavity. The major blood supply to the nasal cavity is by sphenopalatine artery and is more commonly involved in epistaxis. So it is called artery of epistaxis. Younger individuals below the age of 40 years usually bleed from anterior aspect of nose. People above this age bleed commonly from the posterior aspect of nasal cavity. Endoscopic sphenopalatine artery ligation conforms to the ideal of controlling the bleed as close as possible to its nasal sources. Under general anesthesia an incision is made approximately 8 mm anterior to and under cover of posterior end of middle turbinate. The foramen is signaled by crista ethmoidalis.¹ Once main vessel is identified it can be ligated using haemostatic clips and divided or coagulated by using bipolar diathermy.² Herein, we report a case of posterior
Epistaxis in a 22 year old male which was managed with endoscopic sphenopalatine artery cauterization.

**CASE REPORT**

Prashanth 22 year old male patient (IP No : 34653) presented to the casualty with the chief complaints of bleeding from the nose since one day. The illness started as bleeding from the left nostril since morning. He lost few drops of blood in the morning hours and it stopped by afternoon. Then he started to re-bleed in the evening since 4 pm and lost around 200 ml of blood and was brought to casualty by 7pm. He had taken around 180 ml of alcohol on the day of nasal bleed and around 90 ml for the past 2 days.

**EXAMINATION**

Pulse - 110 bpm  BP - 146/110 mmHg

Nose – no external deformity

Fresh blood was present in the left nostril and clots in the right nostril. Deviated nasal septum was seen to the left side. Posterior pharyngeal wall-fresh blood was present.

Patient was admitted and managed conservatively with anterior nasal packing, iv fluid, anti-hypertensives, injection tranexamic acid, and ethamsylate.

The bleeding from nose did not stop and posterior pharyngeal wall showed fresh blood the next day.

He also had an episode of coffee brown vomitus.

Diagnostic nasal endoscopy-showed left deviated nasal septum , spur was present on right side posterior and inferior aspect of septum.Left sphenopalatine area showed pulsation and oozing of blood.

Endoscopic Sphenopalatine artery cauterization was planned and done under general anaesthesia.

**PROCEDURE:**

GA induced, local infiltration given. Endoscopic septoplasty was done to remove the spur ,to improve the access & to have a control over the artery. Left sided uncinectomy,
middle meatal antrostomy done. From the posterior margin of antrostomy the mucosa is elevated till the identification of bony projection called crista ethmoidalis which is a definite landmark for sphenopalatine artery, which lies immediately posterior to it. Sphenopalatine artery was identified and cauterised by suction & bipolar cautery.

The patient improved and was asymptomatic. He got discharged the next day.

**DISCUSSION:**

Studies have suggested a link between alcohol and acute adult epistaxis. In a study in 140 consecutive patients admitted with nose bleed 45% (63 /140) were regular drinkers which was significantly high, thus alcohol is an important causal factor in nose bleeds. Endoscopic sphenopalatine artery ligation was done in 4 patients (1 out of 4 was alcoholic with withdrawal symptoms) with posterior epistaxis. All patients had epistaxis refractory to anterior and posterior nasal packing, which was rapidly controlled by the above procedure. Regular alcohol consumption reduces platelet aggregation and prolongs the bleeding time. These effects coupled with hemodynamic changes such as vasodilatation and changes in blood pressure may be important in causing some cases of arterial nose bleeds in adults. Apart from the considerable discomfort that nasal packing causes to the patient, it is also known to cause hypoxia and airway compromise. The advantage of Endoscopic Sphenopalatine Artery Cauterisation are the definite sealing of bleeder under vision and magnification, avoidance of nasal packing thus reducing patient’s discomfort and morbidity.

Thus Endoscopic sphenopalatine artery ligation should be the definitive mode of treatment for the management of posterior epistaxis.

**CONCLUSION**

Continuous alcohol consumption can definitely cause epistaxis. Endoscopic sphenopalatine artery ligation should be the definitive mode of treatment for the management of posterior epistaxis. The advantage of Endoscopic Sphenopalatine Artery Cauterisation are the definite sealing of bleeder under vision and magnification, avoidance of nasal packing thus reducing patient’s discomfort and morbidity.
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ANEURYSMAL BONE CYST OF THE PATELLA PRESENTER

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ABSTRACT:

Primary tumours of the patella account for less than 0.06% of bone tumours and metastatic lesions are even rarer. Aneurysmal bone cyst (ABC) accounts for 1% among primary bone lesions, and its occurrence in the patella is very rare. Twenty one year old male presented to orthopaedic OPD with complaints of swelling and pain in left knee since one year with increased pain and episodic fever since 3months. There was a history of minor trauma of left knee a year back which healed without any complications there was no other relevant past history. On radiological examination which included x-ray, CT and MRI revealed a osteolytic cystic lesion of patella and provisional diagnosis of aneurysmal bone cyst of Patella made and bone curettage was done. On clinic-radiological and histopathological correlation diagnosis of primary ABC of patella was made. The mainstay of treatment of ABCs is intralesional curettage with locally applied adjuvants such as liquid nitrogen or phenol. Other options include enbloc dissection or selective arterial embolization. Young age and open physes are associated with an increased risk of local recurrence. Hence close follow up of patient has to be made.

KEYWORDS: aneurysmal bone cyst / patella /clinic-radio-pathological correlation

INTRODUCTION:

The patella is an uncommon site for primary tumours of bone. Primary tumours of the patella account for less than 0.06% of bone tumours and metastatic lesions are even rarer. The most frequently encountered benign patella tumour is giant cell tumour (33%), followed by chondroblastoma (16%). Malignant patella tumors include hemangioendothelioma (4%), lymphoma (4%), Osteosarcoma (3%), and metastatic tumors (3%). Aneurysmal
bone cyst (ABC) accounts for 1% among primary bone lesions, and its occurrence in the patella is very rare.²

CASE REPORT

A 21 year-old college student presented with complaints of pain in the left knee of three years duration and swelling of the right knee for one year. He also had episodic history of fever in the evenings for three weeks. There was history of minor trauma on left knee a year back which had no complications and healed completely. There was no history of weight loss or exposure to tuberculosis.

On examination the left knee was swollen and appeared bigger than right knee. There was no localized warmth, but the patella was notably tender. In addition there was a palpable bony thickening of the patella. No synovial thickening or knee joint effusion was noted. Patient was referred for radiological examination and for routine laboratory investigations. Laboratory studies revealed a haemoglobin of 13.5 gm/dl and white blood cell count of 13,000 cu.mm. Inflammatory markers were within the normal limits, ESR was 18, C-reactive protein was negative, and alkaline phosphatase was 286 units. Mantoux test was non-reactive. Radiographic examination of the left knee showed multiple cystic lytic lesions causing expansion of the patella (Fig. 1). Computed tomography showed a lytic lesion localized in the medial of the patella in an eccentric position causing sporadic slimming in the cortex and involving densities of the trabecular patternT1- and T2-weighted magnetic resonance imaging demonstrated a smooth-contoured cystic mass with internal septa containing spicules of bone, occupying half of the patella with a slight expansion anteriorly and causing cortical thinning (Fig. 2).. A preliminary diagnosis of ABC was made.

Surgery was carried out and excised bony tissue was sent for histopathological study (Fig 3).

On receiving the tissue, it was processed routinely and microscopy showed cystic cavities filled with erythrocytes and having no endothelial lining. Fibroblasts, osteoclast-like giant cells, and hemosiderin-laden macrophages surround the non-anastomosing walls of the cystic cavities (Fig 4 & 5) were noted and also fibromyxoid area were prominent which made diagnostic difficulties with close differentials of osteoblastoma.
Retrospectively, the patient was thoroughly examined and screened for any other bone lesions to rule out secondary aneurysmal bone cyst as primary ABC are rare. After clinical-radiological correlation and microscopic findings, the case was diagnosed as primary aneurysmal bone cyst.

**DISCUSSION:**

Primary and metastatic tumours of the patella are rare. Metastatic tumours of the patella are less frequent than primary lesions.\(^1\) Aneurysmal bone cyst (ABC) is an expansile cystic lesion, often occurring in the second decade of life. ABCs although benign can be locally aggressive. The etiology of this condition is not definitively known, although most believe it is a vascular malformation within the bone.\(^1,3\)

Aneurysmal bone cyst may develop in the normal bone as well as in association with a predisposing previous lesion with an incidence of 29-35%, such as giant cell tumor, chondroblastoma, Chondromyxoid fibroma, Telangiectatic osteosarcoma, fibrous dysplasia, or eosinophilic granuloma.\(^2\) ABCs are usually painful, so late presentation as a pathological fracture is less common than with unicameral bone cysts. Biopsy is often needed to confirm the diagnosis.\(^3\)

Aneurysmal bone cyst accounts for 1% of primary bone tumors and is one of the benign tumour-like lesions presenting with enlargement.\(^3\) It mostly occurs in the vertebrae and the metaphysis of long bones, it may occur in association with post traumatic bone fractures, subperiosteal hematoma, or previous bone lesions, or as a result of circulation failure such as venous occlusion or arteriovenous malformation.\(^4,5\)

Aneurysmal bone cysts are generally seen at the ages of 10 to 20 years without a gender predilection. The most important clinical findings are pain and swelling, as seen in our case. Motor or sensory loss due to spinal cord compression may be seen in vertebral involvement. Rarely, a pathological fracture may be observed as the first symptom.\(^5\)

The typical radiographic appearance of an ABC is an expansile and sporadically osteolytic bone lesion with eccentric location. On computed tomography and magnetic resonance scans, internal septa with a honeycomb pattern and fluid-fluid levels are observed within the lesion. In our case, fluid-fluid levels were not observed in radiological studies.\(^2,5\)
Anterior knee pain persisting during night rest should lead to suspicion of a patellar tumour, despite its rarity. A good-quality lateral radiograph of the patella should first be obtained; it will usually reveal a lesion, which should be further investigated. CT scan and MRI can then be used in order to assess the extension of the tumour and to make an accurate preoperative planning. When the diagnosis is clear and the lesion is definitely benign, close follow-up is sufficient in cases such as enostosis, intraosseous ganglion cyst or lipoma. If there is any suspicion of malignancy, histological diagnosis should be obtained before definitive treatment. The mainstay of treatment of ABCs is intralesional curettage with locally applied adjuvants such as liquid nitrogen or phenol. Other options include enbloc dissection or selective arterial embolization. Young age and open physes are associated with an increased risk of local recurrence. Hence close follow up of patient has to be made.

CONCLUSION

Primary intraosseus lesions of the patella are rare. Majority of these lesions are benign. Lesions in patients younger than 40 years of age include giant cell tumour, chondroblastoma, aneurysmal bone cyst, osteomyelitis, osteoid osteoma and solitary bone cyst. The mainstay of treatment of ABCs is intralesional curettage with locally applied adjuvants such as liquid nitrogen or phenol. Other options include enbloc dissection or selective arterial embolization.

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LAPAROSCOPIC APPROACH TO GASTROINTESTINAL STROMAL TUMOR OF STOMACH: A CASE REPORT

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ABSTRACT

Introduction: Gastrointestinal stromal tumors of the stomach are uncommon. They can reach a large size. Diagnosis can be elusive and managing them can be difficult. Our case report aims to increase awareness and highlight some issues related to the diagnosis and management of stomach gastrointestinal stromal tumors.

Case presentation: We present the case of a 40-year-old woman with a large, slowly-growing gastrointestinal stromal tumor of the stomach. Her complaints were minor epigastric discomfort and swelling. The complete tumor excision was performed laproscopical. She was doing very well postoperatively.

Conclusion: Gastrointestinal stromal tumors of the stomach should be suspected in any patient with a epigastric. Extramural growth with or without bleeding should alert the endoscopist to the possibility of a gastrointestinal stromal tumor diagnosis. There is more than one surgical approach available; however, complete surgical excision, with negative margins, is the absolute requirement. Laparoscopic approach is better because of early post-op recovery, less pain and minimal scar. Postoperatively imatinib mesylate should be started.

INTRODUCTION

The most common sites for gastrointestinal stromal tumors (GIST) are the stomach and, to a lesser extent, the small intestine\(^1\). Small intestinal GIST can occur anywhere along the length of the bowel and can be multiple. The duodenum is involved in about 10% to 20% of small intestinal GIST\(^2\).We describe the case of a large GIST of stomach including its presentation, diagnosis, and the type of surgery performed, as well as a review of issues related to GIST in the stomach.
CASE PRESENTATION

A 40-year-old Middle age woman presented with a slowly enlarging abdominal mass of 3 years duration. At presentation, her main complaint was epigastric discomfort. She also gave a history of some mild back pain and occasional abdominal pain. Her appetite was good and she had not lost weight. There was no history of vomiting, change in bowel habits or melena. She had been diagnosed with a peptic ulcer many years ago. On examination she looked healthy with no clinical jaundice or pallor. Abdominal examination revealed an upper abdominal mass moving well with respiration. It had minimal intrinsic mobility and was not tender. The rest of the examination was normal. Her hemoglobin level was 10.8 g/dL, with hypochromic microcytic red blood cell indices. Otherwise, all blood tests were normal. A computed tomography (CT) scan of the abdomen revealed soft tissue density polypoidal mass measuring about 35mm x 48mm arising from wall of antrum protruding into lumen of stomach. The mass showing significant post contrast enhancement. There was no evidence of metastases to the liver or lung. Upper gastrointestinal endoscopy was performed showing a large smooth globular mass seen in body and fundus. No evidence of ulceration. A deep biopsy was taken, but was not diagnostic. After preparation she was taken to the operating theater. Laparoscopically tumour was excised. The patient tolerated the procedure well and had an uneventful recovery. Histopathological examination the tumor showed moderate cellularity and mildly atypical spindle cells arranged in fascicles with a low mitotic count (1/50 high power field) and no necrosis. Prominent skeinoid fibers were seen. Imatinib mesylate (IM) was started as an adjuvant treatment.

DISCUSSION

GISTs are the most common mesenchymal tumors of the gastrointestinal tract. They are most commonly found in the stomach and small bowel. Uncommon sites include the colon, rectum, esophagus and even the liver and mesentery. They mainly affect adults and are uncommon in children. The duodenum is an uncommon site for GIST. It comprises 10%-20% of small-intestinal GISTs, or only three to five percent of all GIST cases. Most data on duodenal GIST are from single case reports or from a few small series. Gastric GIST is usually asymptomatic when small in size and can reach a large size before causing any symptom. As the tumor enlarges it causes variable symptomatology. The most common presentation is gastrointestinal bleeding which may be chronic and mild or...
sudden and massive. The next most common presentations are abdominal discomfort, pain and swelling.

Diagnosis can be made with upper gastrointestinal endoscopy. The tumor is usually exophytic, and appears as a submucosal swelling. The biopsy should be deep, but may not always be diagnostic. Endoscopic ultrasound can help in delineating the submucosal tumor. A CT scan of the abdomen usually shows a retroperitoneal tumor at the site of the duodenum and head of the pancreas. However, CT scans are not always helpful in specifying the origin of the mass.

The treatment of choice for duodenal GIST is complete surgical excision. It is not clear what the optimal surgical margin should be, but a negative one is essential to prevent local recurrence of the tumor. No lymph node dissection is required since they are very unlikely to be involved. The outcome depends on the pathological features of the tumor and the completeness of surgical resection.

Large tumors with high mitotic counts behave much worse than small tumors with low mitotic counts, which are considered benign. Local recurrence is higher in tumors not completely removed or with a positive microscopic margin. Most GISTs respond to IM, so patients with tumors with a high malignant potential should be offered IM as an adjuvant therapy. Preoperative IM can be given in cases of unresectable or borderline resectable cases. This might improve resectability.

CONCLUSION

GIST should be suspected in any patient with a Stomach wall mass. Extramural growth and central ulceration with or without bleeding should alert the endoscopist to the possibility of this diagnosis. There is more than one surgical approach available, but the absolute requirement is complete surgical excision. Preoperative IM can be considered in unresectable or borderline resectable cases.

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LANCE ADAMS SYNDROME: A CASE REPORT
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ABSTRACT

Cerebral hypoxia can be caused by any event that severely interferes with the brain’s ability to receive or process oxygen. Prolonged hypoxia is a well established cause of hypoxic brain injury. Post hypoxic myoclonus refers to myoclonus which develops in a patient who suffered from an event which caused hypoxic brain damage. It is usually seen in patients who recover from coma, it is also seen as a complication of successful resuscitation by CPR, in patients who attempted hanging. We present here a thirty three year old female with Lance Adams syndrome post recovery from coma secondary to respiratory failure. It is very important to diagnose a case of LAS and differentiate it from other causes of myoclonus as it does not respond to all anticonvulsant drugs. Aggressive treatment options should be avoided if early results are not achieved and wait and watch strategy should be employed.

KEY WORDS: Lance-Adams Syndrome, Post Hypoxic syndrome, coma, cardiopulmonary resuscitation

INTRODUCTION

The Central Nervous system is extremely sensitive to hypoxia. Brain can withstand varying degree of hypoxia for a maximum of twenty minutes only, in contrast to other organs which can sustain for many hours. Post hypoxic myoclonus (PHM) is a neurological complication seen in cases with prolonged periods of hypoxia. It is characterized by uncontrolled myoclonic jerks mainly in limbs but can be seen throughout the body. The most common cause of PHM after a successful resuscitation from a cardiac arrest where the cerebral blood flow can be compromised for a prolonged period of time. Other causes include status asthmaticus, status epilepticus, and coma secondary to respiratory cardiac or metabolic causes.
PHM can be of the acute type where the jerks appear within 12 hours of the hypoxic insult, it is called myoclonic status epilepticus. The chronic type of PHM, which is known as Lance-Adams syndrome (LAS), is characterized by action myoclonus beginning within days to weeks after the hypoxic event and persists even after the patient regains consciousness. LAS were first reported by Lance and Adams in 1963 after he observed muscle cramps characteristic of patients who survived cardiac arrest.

Here we present a case of Lance Adams syndrome post extubation following acute respiratory distress syndrome in a female patient who was on ventilator support and in coma for seven days.

CASE REPORT

A 33 year old female presented with jerky movements throughout the body and difficulty in speaking since 15 days. The patient had fever, cough with hemoptysis and difficulty in breathing one month back which worsened over a period of five days. The patient was then diagnosed with right lung abscess causing septicemia. The patient was started on intravenous antibiotics but she developed acute respiratory distress syndrome and had to be put on ventilatory support. The patient was in coma for seven days. The patient was extubated on the seventh day and showed improvement but she started developing myoclonic jerks in her upper and lower limbs. As the patient started ambulating the jerky movements worsened and she started developing difficulty in speaking. The CT brain showed cerebral edema with no other lesions. On examination the patient had motor dysphagia. Cranial nerves examination was normal. The motor and sensory system examinations showed no deficits. The patient had involuntary movements on attempting to walk or do any voluntary activities.

Haemogram, serum electrolytes were normal. A repeat CT scan was done at our hospital which showed a normal study. EEG suggested multifocal epileptogenic activity. Given the prolonged period of hypoxia secondary to respiratory arrest and coma, post hypoxic myoclonus (Lance Adams syndrome) was diagnosed.

Figure 1: Electroencephalogram recorded on day 1 and 2 shows widespread spike and wave activity which appear to be multi-focal in origin.
TREATMENT AND FOLLOW UP

The patient was already started on clonazepam 10mg and levitiracetam 500mg. We started the patient on sodium valproate 200mg and explained about the condition and its prognosis. The patient was discharged with the above drugs and asked to follow up every 15 days. The patient improved dramatically in the follow up visits and by the end of two months the myoclonic jerks were only restricted to the upper limbs.

DISCUSSION

Lance Adams Syndrome is characterized by myoclonus that starts days to weeks after a hypoxic event. The myoclonus is triggered by intentional action or external stimuli like loud noise, it is relieved when the patient rests or sleeps. The diagnosis of LAS is mainly clinical were preceding hypoxic event must be present. The exact mechanism of post hypoxic myoclonus is unknown but is thought to be related to an abnormal finding of diverse neurochemicals, in particular, loss of serotonin metabolite, 5-Hydroxyindole amino acid. This hypothesis is further strengthened by the fact that patients show improvement with administration of serotonin precursor, 5-hydroxytryptophan (5-HTP). Substances like GABA affect the clinical progression of LAS by influencing the 5-HT system.

There are no guidelines for treatment of the disease as a result, treatment is limited and is often decided on empirically. Some authors have questioned the role of anticonvulsants.
in the treatment of PHM; Choi HC at al. in their study found that the clinical outcome was not affected by the drug response of myoclonic status epilepticus or etiology of hypoxia. In a study done by Frucht S et al., an improvement in the symptoms of LAS patients was seen in 50% cases that were started on clonazepam, sodium valproate, and piracetam, in monotherapy levetiracetam was most effective in regulating the symptoms of LAS.

The prognosis is good when the treatment is started in early stages LAS. The role of rehabilitation including physiotherapy exercises together with drug treatment has been shown to slow the progression of LAS and prevent additional disabilities.

It is very important to diagnose a case of LAS and differentiate it from other causes of myoclonus as it does not respond to all anticonvulsant drugs. Therefore, when a patient develops uncontrolled myoclonus after a hypoxic episode and the myoclonus is not responding to traditional anticonvulsants, the possibility of LAS should be considered. As large scale clinical trials are lacking about the role of drugs research in that area will help formulate a protocol. Time is also a factor in this disease as many cases dramatically improve with time. Aggressive treatment options should be avoided if early results are not achieved and wait and watch strategy should be employed.

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NEUROIMAGING OF TUMEFACTIVE MULTIPLE SCLEROSIS: A CASE REPORT

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ABSTRACT

Tumefactive multiple sclerosis is a demyelinating disease that demonstrates tumor-like features on magnetic resonance imaging. Although diagnostic challenges without biopsy have been tried by employing radiological studies and cerebrospinal fluid examinations, histological investigation is still necessary for certain diagnosis in some complicated cases. A 6-year-old boy was referred to our department for evaluation with complaints of difficulty in walking and diminution of vision. On MRI bilateral fronto-parietal lobes showed multiple, irregular white matter lesions, the lesions are hypointense on T1W, hyperintense on T2W sequences, centre of the lesions showed inversion on FLAIR sequences, free diffusion on DWI and no blooming on GRE sequences. There is evidence of mild perilesional edema. On contrast administration the lesions showed incomplete ring of enhancement which is open on gray matter side of lesion. Abnormal elevation of the glutamate/glutamine peaks is seen. Fulminant aggravation of the disease can cause irreversible neurological deficits. Thus, an early decision to perform a biopsy is necessary for exact diagnosis and appropriate treatment if radiological studies and cerebrospinal fluid examinations cannot rule out the possibility of brain tumors.

KEYWORDS: MRS: magnetic resonance spectroscopy; MRI: magnetic resonance imaging; PET: positron emission tomography; tMS: tumefactive multiple sclerosis.

INTRODUCTION

Tumefactive multiple sclerosis (tMS) is a demyelinating disease. Because of its tumor-like features on magnetic resonance imaging (MRI) \(^1,2\), histological investigation had played an important role for definite diagnosis of tMS \(^3,4\). Recently, without biopsy, some tMS cases were diagnosed by magnetic resonance spectroscopy (MRS), positron
emission tomography (PET), cerebrospinal fluid (CSF) examination, and response to steroid treatment. However, the diagnosis of tMS without histological confirmation is no more than speculation in some complicated cases. We report the case of a patient who had tMS and who required biopsy for exact diagnosis.

CASE PRESENTATION

A 6-year-old boy was referred to our department for evaluation with complaints of difficulty in walking and diminution of vision. On MRI bilateral fronto-parietal lobes showed multiple, irregular white matter lesions, the lesions are hypointense on T1W (Fig 1), hyperintense on T2W (Fig 2) sequences, centre of the lesions showed inversion on FLAIR sequences (Fig 3), free diffusion on DWI (Fig 3) and no blooming on GRE sequences (Fig 4). There is evidence of mild perilesional edema. On contrast administration the lesions showed incomplete ring of enhancement which is open on gray matter side of lesion. There is faint enhancement within the dilated, centrally located venous structures. Abnormal elevation of the glutamate/glutamine peaks is seen. Screening of spine is normal.

![Fig 1](image1.jpg)

**Fig 1.** Bilateral parietal lobes show multiple, irregular white matter hypointense lesions on T1W sequence

![Fig 2](image2.jpg)

**Fig 2:** Bilateral fronto-parietal lobes show multiple, irregular white matter lesions. The lesions are hypointense on T2W
Fig 3. Bilateral parietal lobes show multiple, irregular white matter lesions. Centre of the lesions show inversion on FLAIR sequences.

Fig 4 No blooming on FFE sequence

Fig 5. MR spectroscopy shows abnormal elevation of the glutamate/glutamine
DISCUSSION

The term ‘tumefactive MS’ was used when the clinical presentation and MRI findings were indistinguishable from those of a brain tumor. Recently, some successful challenges to diagnose tMS by using MRS and PET, without biopsy, have been reported, and careful follow-up by serial MRI with or without steroid treatment is usually sufficient to establish the diagnosis. In general, tMS lesions respond well to steroids and no radiological evidence of new lesions is identified after the treatment in most patients. Although the clinical course of tMS is various with acute onset, the prognosis of tMS usually does not depend on the clinical presentation. However, in some atypical cases, the radiological diagnosis is no more than speculative if histological diagnosis is not obtained. Butteriss and colleagues reported an interesting case of oligodendroglioma in MS that was diagnosed by surgical removal of the lesion but that had been considered to be tMS on pre-operative MRI. In our case, fulminant deterioration of the clinical symptoms and rapid enlargement of the lesions on MRI. When monoclonal bands are not detected in CSF and radiological examinations cannot completely rule out a malignant brain tumor, an early decision to perform a biopsy is required. Once fulminant deterioration of clinical signs and symptoms occurs in a patient with tMS, the neurological deficits can be irreversible.

CONCLUSION

To diagnose tMS without histological investigation is an initial approach to the disease. However, early biopsy should not be delayed if radiological examination failed to confirm the diagnosis.

REFERENCES


Case report

SEPTIC ARTHRITIS OF HIP IN ADULT TREATED WITH TWO-STAGE SURGERY: A RARE CASE REPORT.

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ABSTRACT

Primary septic arthritis in adults is a rare, but potentially devastating disease. Resection hip arthroplasty helps to eradicate the infection but leaves the patient with unstable mobile hip with a limb length discrepancy. Total hip arthroplasty with interval antibiotic-loaded bone cement after resection arthroplasty has been proposed to clear infection and improve hip function after septic hip arthritis. A 45 yrs male patient, with C/O pain in right hip, difficulty in walking since 1 yr, with H/O fever on and off in the past one year with h/o massage. O/E diffuse tenderness present over joint line of hip, all movements of hip painful. Laboratory tests showed increased TLC, raised ESR, CRP positive. X-ray PBH and MRI of hip joint shows distorted right hip joint space, destruction of articular margin and sclerotic change in femoral head. In first stage of surgery patient was treated with resection arthroplasty (Girdle stone osteotomy) & antibiotic beads in situ application, and after successfully eradication of the infection, patient underwent the second stage of hip joint reconstruction with cemented prosthesis after antibiotic beads removal. Patient is followed up with x-ray and clinically showed excellent improvement. Two-stage surgery with Resection arthroplasty and total hip arthroplasty with cemented implants provide a reliable solution in the medium-term F/U for septic arthritis of the hip joint in adults.

INTRODUCTION

Primary septic arthritis in adults is a rare, but potentially devastating disease. The key factor in the selection of the type of surgery is symptom duration. Early onset of infection can be treated with radical open or arthroscopic debridement. Failure rates after debridement increase rapidly in the first days after onset of symptoms and more radical surgery may be required as joint damage takes place. Resection hip arthroplasty helps to
eradicate the infection but leaves the patient with a leg length discrepancy, dependency on ambulatory aids, and variable pain relief\(^2,3\). Two-stage total hip arthroplasty (THA) with an interval antibiotic-loaded bone cement has been recently proposed to clear infection and improve hip function after septic hip arthritis\(^4,5,6\). In a recent case report, Regis et al.\(^7\) described successful two-stage hip reconstruction after septic arthritis with a commercially produced, preformed antibiotic-impregnated bone cement.

**CASE REPORT:**

A 45 yrs male patient, came with complains of pain in right hip, difficulty in walking since 1 yr, history of trivial fall a year back, history of massage present. And initially for few days patient had reduced pain after massage but soon developed fever intermittent type and difficulty in walking, unable to squat or sit crossed legs and pain increased in intensity and gradually he started to have pain during rest too. No h/o loss weight or appetite was seen. It was interfering his daily activities. On examination, healed burnt marks present over the right hip region were present. Diffuse tenderness present over joint line of hip, with all the movements of hip were painful. SLRT was 10 degree on affected hip. No shortening present. Laboratory tests increased TLC, raised ESR, CRP positive.
X-ray pelvis with both hips shows decrease in right hip joint space and sclerotic changes in femoral head and destruction of articular cartilage. MRI showed destruction of articular margin and sclerotic change in femoral head.

In first stage of surgery patient was treated with resection arthroplasty (Girdlestone osteotomy) joint was rinsed with saline solution and antibiotic cemented beads were kept in the resectioned part and one bead in the muscle plane. Resected femoral head was sent for histopathology which showed features of septic arthritis.

Patient was successfully eradicated of the infection as evidenced by clinically and blood investigations CBC and CRP within normal range, underwent the second stage of hip joint reconstruction with cemented prosthesis after antibiotic beads removal with intra-op cultures were taken which was sent for culture sensitivity which was sterile.

Partial weight bearing with two crutches was allowed for one month, then full weight bearing was permitted after one month.

Patient was followed up every month with x-ray for first 3 months and then on every 3 monthly once till 1 year. Now at one year follow up patient has clinically showed excellent improvement in his function.
CONCLUSION

Two-stage revision surgery with Resection hip arthroplasty and total arthroplasty with cemented implants provide a reliable solution in the medium-term follow-up for septic arthritis of the hip and may be offered to patients as a valuable treatment option.
DISCUSSION

Septic arthritis of the hip usually is encountered in children as an acute febrile illness induced either by septicemia of the local inoculation of a joint caused by trauma or adjacent osteomyelitis. Primary septic arthritis of the hip in an adult is relatively rare.

Based on the most recent literature, staged reconstruction of the hip after septic arthritis may be considered as a reliable alternative to conventional resection arthroplasty. However, owing to the limited series and the differences in technical approach, the results with this procedure appear unpredictable and difficult to standardize. Chen et al.\(^8\) reported a re-infection rate of 14% and a complication rate of 36% after two-stage THA without temporary devices for primary septic arthritis of the hip. Only five papers have described a series of patients treated with a temporary device and a hip prosthesis in the second stage for septic hip arthritis. The infection recurrence rate after prosthesis implantation ranges from 0 to 15%.

Our results are in line with previously published data at a longer follow-up and in a larger patient series.

REFERENCES


ACTIVITIES DONE UNDER DISTRICT DISABILITY REHABILITATIVE CENTRE, BLDE HOSPITAL, VIJAYPUR, KARNATAKA OF THE YEAR 2013-14

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ABSTRACT

Introduction

Disability is defined as any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being. An estimated 18.6 million (2.9%) were severely disabled and another 79.7 million (12.4%) had moderate long-term disability. The major causes of disabling impairments in the developing countries are communicable diseases, malnutrition, low quality of perinatal care and accidents. With aim to provide rehabilitation for the poor and needy patient’s Government of Karnataka established District Disability Rehabilitation Centers (DDRC). Objectives: 1. To provide accessible rehabilitation services and Health care to all differently abled persons of district and 2. To Improve their productivity to prevent the occurrence of disability. Material and Methods: The District Disability Rehabilitation Centre in Vijayapur was established in 2013. A total of 13 Health Camps were conducted in village of Ukkali and Vijayapur town of Vijayapur district in the year of 2013-14. Patients were examined in the DDRC Centre BLDE hospital with functioning of various specialties such as Orthopedics, ENT, Ophthalmalogy, Psychiatry and Pediatrics. Results: A total of 2483 patients attended health camps with various disabilities. A total of 180 patients were treated in DDRC Centre, BLDE hospital. Conclusion: DDRC is a good concept and it helps in treating poor needy irrespective of the severity disability it aims to improves the lifestyle of the patient such center are needed especially in developing countries like India to attain WHO action plan which is to attain better health for patients with disabilities.
INTRODUCTION

Disability is defined as any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being. Impairment is defined as “any loss or abnormality of psychological, physiological or anatomical structure or function”, e.g., loss of foot; defective vision or mental retardation.¹ An estimated 18.6 million (2.9%) were severely disabled and another 79.7 million (12.4%) had moderate long term disability, according to the definitions given above.² Disability prevalence’s rise strongly with age. The average global prevalence of moderate and severe disability ranges from 5% in children aged 0–14 years, to 15% in adults aged 15–59 years, and 46% in adults aged 60 years and older.³ These are responsible for about 70 per cent of cases of disability in developing countries. Primary prevention is the most effective way of dealing with the disability problem in developing countries.⁴ When a patient reports late in the pathogenesis phase, the mode of intervention is disability limitation. The objective of this intervention is to prevent or halt the transition of the disease process from impairment to handicap.⁵

Rehabilitation has been defined as “the combined and coordinated use of medical, social, educational and vocational measures for training and retraining the individual to the highest possible level of functional ability”.¹ It includes all measures aimed at reducing the impact of disabling and handicapping conditions and at enabling the disabled and handicapped to achieve social integration.⁶ People with disabilities have fewer economic opportunities and less productivity and have higher rate of poverty than people without disability.⁷ There is lack of services available to them due to poor economic status.⁸ With aim to provide rehabilitation for the poor and needy patient’s government of Karnataka established District Disability Rehabilitation Centers.

AIMS

1. To provide accessible rehabilitation services and Health care to all differently abled persons of district and
2. To Improve their productivity to prevent the occurrence of disability.
OBJECTIVES

1. To survey and identify persons with disabilities through camp approach
2. Awareness creation
3. Early intervention
5. Therapeutic services- Physiotherapy, Occupational Therapy, speech therapy, etc.
6. Facilitation of disability certificate
7. Promotion of barrier free environment

METHODS

The District Disability Rehabilitation Centre in Vijayapur was established in 2013. Health Camps were conducted in Vijayapur district of Karnataka in the year of 2013-14.

Patients were also examined in the DDRC Centre BLDE hospital functioning of various specialties such as Orthopedics, ENT, Ophthalmology, Psychiatry and Pediatrics.

RESULTS

A total of 28 health camps were conducted in various places in Vijaypura District, Namely Villages of Ukkali, Golageri, Muttagi, Terdal and in Towns of Sindagi, Basavanbagewadi Jamkahandi, and Vijayapur. A total of 2483 patients were examined in the health camps and total of 180 patients were treated in DDRC Centre, BLDE hospital. Patients were given appropriate rehabilitative treatment after diagnosis. Findings in the year 2013-14 are given below in Table 1, Figure 1, Figure 2, Figure 3.

Figure 1: Distribution of the patients examine according to months
Table 1 - Distribution of patients examined with different specialties in health camps

<table>
<thead>
<tr>
<th>Departments</th>
<th>Patients treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT</td>
<td>465</td>
</tr>
<tr>
<td>OPHTALAMOLOGY</td>
<td>1111</td>
</tr>
<tr>
<td>ORTHOPAEDICS</td>
<td>463</td>
</tr>
<tr>
<td>PSYCHITRY</td>
<td>444</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2483</td>
</tr>
</tbody>
</table>

Figure 2: Distribution of the Patients Examined according months at DDRC centre

CONCLUSION

DDRC is a good concept and it helps in treating poor needy irrespective of the severity of disability it aims to improve the lifestyle of the patient. In our center, we have treated poor and needy patients and there is a reduction in mortality and morbidity in the area. Such centers are needed especially in developing countries like India to attain WHO action plan which is to attain better health for patients with disabilities.
The program should be monitored by evaluating the performances of the centers periodically. Funds should be released on time for the better performance of the centers from the concerned department.

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