SURGICAL EXCELLENCE,
WITH UNPARALLELED COMPETENCY

KIMS Centre for General & Minimally Invasive Surgery is South Kerala’s Largest General Surgery unit with experienced surgeons available 24x7 providing a wide range of procedures both elective & emergency.

OUR SERVICES

- All Abdominal, Elective & Emergency Surgeries
- Management of Diabetic foot Infections
- Gall Bladder & Appendix - Keyhole Surgery
- Hydrocele & Hernia Surgery- Open & Laparoscopic
- Painless surgery for Piles, Fistula & Fissures
- Surgical procedures for Breast lumps & Cancer
- Salivary Gland Surgery
- Thyroid & Parathyroid Surgery
- Varicose Vein - Minimally Invasive, Laser & Radio Frequency
- Weight Reduction Surgery - Bariatric

OUR EXPERTS

Prof. Dr. Vijayan K N
Coordinator & Professor Emeritus
Dr. Shafy Ali Khan S L, Consultant
Dr. Firoz Khan M H, Consultant
Dr. Liju Varghese, Consultant
Dr. Mittu John Mathew, Consultant

Dr. Najeeb A A, Consultant
Dr. Sandeep. B. Pillai, Consultant
Dr. P.P. Nair, Sr. Consultant
Dr. R. Padmakumar, Consultant
Dr. Maya Devi T J, Hen. Consultant

When you need expert surgical care, Trust us

For more details & appointments: 0471 3041000

KIMS TRIVANDRUM
Accreditations

- **ACHSI (Australian Council on Healthcare Standards International)**
  KIMS got ACHSI accreditation in the year 2006 for demonstrating continuous improvements in patient safety and delivery of quality healthcare that is at par with international standards.

- **NABH (National Accreditation Board for Hospitals & Healthcare Providers - India)**
  KIMS received NABH in the year 2006 as a recognition of its commitment to ensure safe healthcare practices and infection control measures.

- **NABL (National Accreditation Board for Testing & Calibration Laboratories)**
  The Laboratory at KIMS is accredited by NABL in the year 2008, for ensuring precise diagnosis and following safe practices.

- **NABH (National Accreditation Board for Hospitals & Healthcare Providers - India)**
  KIMS Blood Bank is accredited by NABH in the year 2011, as recognition of its commitment to make safe blood and blood products easily available at the hour of need by adhering to modern techniques and quality standards.

- **KIMS**
  KIMS is certified with nursing excellence by NABH in the year 2015, as a recognition of its commitment towards safe and ethical nursing care.

- **NABH Medical imaging services**
  KIMS Blood Bank is accredited by NABH in the year 2011, as recognition of its commitment to make safe blood and blood products easily available at the hour of need by adhering to modern techniques and quality standards.

Recognitions

- **Best Hospital IT Project Award 2017.**
- **Australian Council on Healthcare Standards International Medal for outstanding contribution at an international level to improving quality and safety in health service.**
- **NIB Awards 2016 for House Journal - Best Content.**
- **Golden Peacock National Quality Award 2014 in Healthcare Sector.**
- **Best Service Provider Award 2014 from Star Health and Allied Insurance Company Ltd.**
- **Golden Peacock International Business Excellence Award for the year 2013 initiated by Institute of Directors, United Kingdom.**
- **Commendation Certificate of Kerala State Government for energy conservation for the year 2012.**
- **TRXIM CSR award 2012, for excellence in CSR Activities undertaken for the financial years 2010-2011 and 2011-2012.**
- **Dr Pratap C Reddy Safe Care award for Best Medication Safety Initiative 2011.**
- **Avaya Global Connect Customer responsiveness Award 2010.**
- **South Asian Federation of Accountants (SAFA) award for best presented accounts and corporate governance disclosure.**
- **A – stable rating by CRISIL for best financial reporting in the year 2008.**
- **Hospital Management Asia (HMA) Award for the Project Musculo skeletal injuries in 2009.**
- **AV Gandhi Memorial Award 2007 and 2008 for excellence in Cardiology.**
- **Award for transparency in financial reporting in the year 2005 and 2006.**
- **Best Power User Award by Cyber India Online for optimal power utilisation in the healthcare industry in India in 2004.**
- **Kerala State Pollution Control Board Award for biomedical waste management in 2004 & 2006.**
- **Health Tourism Award 2005 for maximum foreign exchange earnings.**
- **Best Customer Site Award from HCL Infosystems Ltd.**
- **Regional ACLS Training Center by American Heart Association.**

Asia’s leading tertiary care hospital
Departments
Orthopaedics
Nephrology
Urology
Hepatobiliary, Pancreatic and Liver Transplant Surgery
Gastroenterology
Pathology
Neurosurgery
Dental and Oro-Maxillofacial Surgery
Interventional Radiology
Internal Medicine
Minimal Access Surgery, KIMS Cochin
Neonatology
Obstetrics and Gynaecology
Paediatrics
Dermatology
Respiratory Medicine
SOCOMER

Support
Dr. Lumiya Malik
Dr. Prasad Mathews
Dr. Gowri Govind
Editorial

A New Year always brings with it, expectations of all kinds. Let’s fulfill it by adopting and maintaining a healthy lifestyle. A healthy environment is always a challenge to any society. Every individual has an equal responsibility and owes contributions to keep our environment clean and pollution free.

We have included in this Issue, a few interesting case reports like foramen magnum tumour removal which is extremely complex and challenging. Laparoscopic lumbar sympathectomy for Hyperhidrosis—a difficult problem effectively managed by our expert Laparoscopic surgeons at KIMS Cochin, rare and complex Combined Liver-Kidney transplantation in a paediatric patient with primary Hyperoxaluria.

During the previous year, there has been addition of focussed subspecialities like Paediatric Cardiology, Neurology and Respiratory medicine. Child Development Clinic as a new initiative has dedicated specialists for the care and rehabilitation of children with varied problems hampering their normal day-to-day activities. Our Interventional Radiology team has advanced capabilities for cost effective procedures. Targeted Liver Cancer Treatment with IODINE 131 started in KIMS Trivandrum is precise with minimal side effects to adjacent organs and is cost effective too.

As a CSR initiative KIMS now has a dedicated Home Care team to look after the aged and debilitated.

We are happy to present in this issue, a spree of in-house research studies undertaken by our departments, especially paediatric, neonatology and respiratory medicine. We thank all contributors, particularly the Academics team for their support.

We wish all our readers a very healthy and fruitful year ahead.

The Editorial Board
Contributions for KIMS Proceedings

All faculty members of Kerala Institute of Medical Sciences in India and abroad are invited to contribute to this medical journal. Since nursing service also play a crucial role in the healthcare delivery, they are also encouraged to contribute. We welcome purely medical articles either original or already published elsewhere, case reports, CPU reports and interesting topics of discussion. Materials from our sister concerns and invited guests will be entertained.

Instructions to Authors

- Original articles: Reports of original Clinical Research. The text should be limited to 1500 words with an abstract, maximum 3 tables and 15 references.

- Case reports: Reports of interesting clinical cases. The text should be limited to 2 tables and 10 references.

- Review articles: Evidence based reviews of topics relevant to practicing doctors. It should not be a personal interpretation of the topic but a critical evaluation of the topic with current evidence included. The text should be limited to 250 words with 5 tables or figures and 25 references.

- Articles require the full name of Author/Authors, Abstract, Keywords, Introduction, Case report, References and also Name of Corresponding Author, Designation with active email id.

- All abbreviations should be expanded at first use.

- References and Images to be marked at appropriate places in the text.

- Images used in article has to be good quality. Images also to be attached as (tiff/jpeg) alongwith article.

For contributions mail to:

kimsproceedings@kimsglobal.com
CONTENTS

Case Report

11 Anterior dislocation of the Hip - A case report

15 Paediatric Combined Liver-Kidney Transplant in the Management of Primary Hyperoxaluria - A case report

18 Left Jugular Foramen Atypical Meningioma - A case report

Case Report

27 Melioidosis : An emerging infection

30 Laparoscopic Lumbar sympathectomy for Hyperhidrosis – A case report

Review Article

34 Surfactant Replacement Therapy

Institutional Research Studies

37 Infective complications in single dose versus three doses of prophylactic antibiotics in caesarean section and hysterectomy- A prospective study

39 Thermal regulation in hospitalized stable preterm using isothermal mattress - A randomized control trial

43 Clinical profile of patients diagnosed with Expiratory Central Airway Collapse in a tertiary care centre
Institutional Research Studies

44. Language outcome of very Low Birth Weight Infants (VLBW) at corrected age of 2 years

47. Clinicoetiological profile and outcome of urticaria in children aged 1 month to 15 years in a tertiary care center - A descriptive study

55. Normal saline vs heparin saline infusion for catheter patency in neonates

57. Metabolic syndrome among overweight and obese children - A descriptive study

58. Process of developing audio-visual information for invasive procedures in NICU – Opportunities and challenges

61. Role of bronchial provocation test in evaluation of chronic cough with normal chest x-ray

SOCOMER

62. Society for Continuing Medical Education and Research: Programme list
Abstract
Traumatic anterior dislocation of the hip forms approximately 11% of hip dislocations and is divided into superior and inferior types. The vast majority of hip dislocations occur from high-energy motor vehicle trauma. The objective of this article is to describe the management options of this condition and also points out unusual mechanisms causing this injury.
Key words: Anterior hip dislocation, trauma, hip joint, closed reduction

Case report
A 46 years old male was seen in the Emergency department following a road traffic accident after sustaining injury to his right lower limb. His primary complaints were pain in the right hip and inability to bear weight with right lower limb. On clinical evaluation, findings included shortening, external rotation of his right lower limb and tenderness over the right groin. Distal Neurovascular functions were intact.

A plain X-ray AP of pelvis and hip were taken. From the clinical and radiological studies he was diagnosed to have an anterior dislocation of right hip (fig 2) and 2nd rib fracture right side.

A CT Scan was ordered to rule out acetabular fracture or other associated pelvic injury, which showed an undisplaced fracture of medial wall of the acetabulum on same side (fig 3).

He was informed about the nature of injury and need for emergency closed reduction under adequate analgesia and relaxant in the emergency
Case Report

Department. He was also informed about the need for open reduction under general anesthesia in case attempt to reduce in the emergency department fails. 2-3 attempts of closed reduction maneuver were tried in the emergency department which was unsuccessful. As planned earlier open / closed reduction under GA in the operation theatre was advised to the patient. After getting informed written consent he was taken into the operation room. With the patient supine on the operating table under GA, a modified Allis maneuver (Fig 4) was employed. 2-3 closed reduction was attempted, but in vain. As a last attempt at closed reduction the anterior dislocated femoral head was pushed to the posterior aspect of the acetabulum along the medial rim of acetabulum and then the resultant posterior dislocation was reduced in the standard technique described for reducing posterior dislocation. Post reduction check radiographs were satisfactory (Fig 5).

Fig 5: Post reduction x-ray image showing concentric reduction of hip joint.

The patient was placed on skin traction for few days. Analgesics and deep vein thrombosis prophylaxis were started. The patient was allowed partial weight bearing after three weeks and followed up on a monthly basis. He was able to resume his daily activity after a period of 6 weeks At the 1 year follow-up he has no radiological evidence of avascular necrosis.

Discussion

The hip joint is anatomically the most stable joint in the body. It consists of a ball; the femoral head, and a socket; the acetabulum. The large muscle envelope around the hip joint acts as a dynamic stabilizer of the joint. Anterior dislocations of the hip are uncommon, forming only approximately 10-15% of hip dislocations. Pure hip dislocation or dislocation with femoral head fracture is generally a result of high-energy trauma and is often accompanied by
associated injuries. The position of the hip, the force vector applied, and the individual’s anatomy all affect the direction of the dislocation. The less common anterior dislocations are the result of hyperabduction and extension. They occur in deceleration injuries in which the occupant is in a relaxed position during impact with the legs flexed, abducted, and externally rotated, as well as in motorcycle accidents where the legs are frequently hyperabducted. The treatment of hip dislocations and femoral head fractures is directed towards avoiding complications by emergent reduction and by providing a congruent and stable joint. The degree of hip flexion determines the type of anterior dislocation, with extension leading to a superior pubic dislocation and flexion resulting in an inferior obturator dislocation. Hip dislocations are associated with more life threatening injuries and other associated skeletal injuries as well (Table 1).

Table 1

<table>
<thead>
<tr>
<th>Common associated injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelvic ring fractures</td>
</tr>
<tr>
<td>Femoral neck fractures</td>
</tr>
<tr>
<td>Acetabular fractures</td>
</tr>
<tr>
<td>Femoral head fractures</td>
</tr>
<tr>
<td>Knee ligament injuries</td>
</tr>
<tr>
<td>Spine injuries</td>
</tr>
<tr>
<td>Femoral shaft fractures</td>
</tr>
</tbody>
</table>

Clinically, the involved leg is foreshortened and excessively rotated, either externally rotated in an anterior dislocation or internally rotated in posterior dislocations. Large areas of ecchymosis may be observed around the abdomen, proximal thigh, or knee. Once there is a concern for a hip dislocation, palpation of all long bones and joints of the affected extremity along with a meticulous neurologic and vascular examination is required. A thorough knee examination is also paramount, as there is a high association of ligamentous knee injuries and the presence of a large transverse laceration is another indication that a hip dislocation may have occurred.

Management of Anterior Hip dislocation

Imaging
The first study available is usually the anteroposterior (AP) pelvis radiograph. This is usually taken as part of the initial trauma workup and helps direct the treatment. The diagnosis of hip dislocation should be apparent on this single radiographic view. The key to the diagnosis on the plain AP pelvis is the loss of congruence of the femoral head with the roof of the acetabulum. On a true AP view, the head will appear larger than the contralateral head if the dislocation is anterior. In an anterior dislocation, the head may appear medial to or inferior to the acetabulum. After plain radiographic evaluation, CT with 2 mm cuts through the hip should be obtained.

Non-operative management
The initial management for almost all hip dislocations is to attempt a closed reduction. Regardless of the direction of the dislocation, the reduction is attempted by traction in line with the femur and gentle rotation. In case of anterior dislocations, Walker modification of the Allis technique is employed. If the hip is irreducible, then immediate open reduction is necessary. If the closed reduction is successful, then postreduction studies including AP and Judet views of the hip and a CT scan imaging are obtained to determine the congruence of the reduction and the postreduction position of any associated fractures.

Operative management is indicated when the hip is irreducible, in an incongruent reduction, injury to the sciatic nerve following an attempted reduction, and in some cases of fracture– dislocation.

Post Operative care
For patients whose hips have been reduced within 6 hours, the standard postreduction regimen includes a brief period of rest for several days to 2 weeks.
followed by mobilization. Continuous passive motion is desirable to avoid the intra-articular adhesions and arthritis that come from long immobilization. Extremes of motion are avoided for 6 to 8 weeks to allow for capsular healing. Most patients can achieve full weight bearing by 6 weeks. In patients who have undergone an operative fixation the rehabilitation is determined by the associated injury. In the case of posterior wall acetabular fractures or femoral head fractures, active hip motion may be deferred for approximately 6 weeks. Passive motion is encouraged via a continuous passive motion machine. Foot flat weight-bearing ambulation begins immediately and continues for 10 to 12 weeks. Hip dislocations associated femoral neck fractures are treated based on the type of fixation and the type of femoral neck fracture without regard for the dislocation.

Complications associated with Hip dislocations
Avascular necrosis of the femoral head accounts for 1-40% of the complications associated with hip dislocation. Other complications in their decreasing order of severity are, post traumatic arthritis, recurrent dislocation, delayed diagnosis of hip dislocation, sciatic nerve injury. Sciatic nerve injury occurs in about 20% of patients with hip dislocation. The other outcomes include foot drop, infection, iatrogenic sciatic nerve injury, thromboembolism and heterotrophic ossifications (higher incidence after open reduction and fixation).

Conclusion
Anterior dislocations are uncommon injury and a high index of suspicion is required to make an early diagnosis. Planning for emergent reduction- open if needed- is required to reduce complication rates.

References

Address for correspondence
Dr. B Madan Mohan
Consultant, Orthopaedics and Trauma
e-mail : drmadan.mohan@kimsglobal.com
Abstract

Primary hyperoxaluria type-1 (PH1) is a rare inherited autosomal recessive disorder in which a deficiency of the hepatic enzyme alanine-glyoxylate aminotransferase leads to endogenous oxalate overproduction, renal failure, systemic oxalate deposition and death. As hemodialysis provides insufficient oxalate clearance, patients ultimately require both liver and kidney transplantation for correction of the metabolic abnormality and oxalate excretion. We review the literature regarding liver-kidney transplantation and suggest that for patients with PH1, a standardized assessment of organ dysfunction and functional impairment may improve identification of patients requiring urgent transplantation thereby reducing the morbidity and mortality that can occur with delayed transplantation.

Key words: Primary hyperoxaluria, renal transplantation, liver transplantation

Introduction

Primary hyperoxaluria type-1 (PH1) is a rare autosomal recessive inherited metabolic disorder occurring in 0.11 to 0.26 per 100,000 births\(^1\). It results from deficiency or mistargeting of the hepatic peroxisomal enzyme alanine-glyoxylate aminotransferase (AGT) which normally catalyzes the transformation of glyoxylate to glycine\(^2\).

Deficiency or mistargeting of this enzyme leads to reduced transamination of glyoxylate to glycine, and increased production of the insoluble by-product oxalate. Oxalate is excreted exclusively by the kidneys and endogenous overproduction leads to supersaturation of urine with oxalate and subsequent oxalate urolithiasis, nephrocalcinosis, renal tubular damage, renal failure and death\(^2\). When glomerular filtration rate (GFR) is less than 25 mL/min/1.73 m\(^2\), production of oxalate far exceeds renal oxalate clearance and a rapid decline in renal function ensues\(^3\).

Patients lacking AGT activity require both liver and kidney transplantation to correct the metabolic abnormality and allow for oxalate elimination. The goal of this case presentation is to discuss the importance of identifying patients with ESRD secondary to PH1 who may benefit from urgent liver-kidney transplantation. Current pre-transplantation assessment methods such as the Model for End-Stage Liver Disease (MELD) are based on the severity of liver failure score and do not incorporate the extent of systemic disease associated with PH1\(^4\).

Case Report

• 14 year old boy with Nephrocalcinosis due to Type 1 primary Hyperoxaluria with homozygous AGXT gene mutation was on MHD since the age of 12 years.
• Evaluated for Combined Liver-Kidney Transplant (CLKT) and registered with Mritasanjeevaniprogramme of Kerala State.
• After registration he was put on 6 hours’ dialysis 6 days a week to reduce the body oxalate stores.
• He underwent deceased donor CLKT on 8/2/2014 from a deceased 19-year-old donor with Basilixmab induction

• Currently he is on our follow up with good graft functions on three drugs.
• This is the first successful Pediatric CLKT in the State of Kerala.

Discussion

PH1 is a rare cause of ESRD. Symptoms of PH1 are typically secondary to urolithiasis (renal colic, hematuria, urinary tract infection, acute renal failure from complete obstruction)\(^2\). Patients can also present with ESRD (up to one-third of patients in some case series) with a median age of 25 to 40 years\(^6\). Because the efficacy of treatment is dependent upon early diagnosis, a high degree of suspicion must be maintained with a history of recurrent nephrolithiasis, radiological evidence of nephrocalcinosis, or ESRD with a history of renal stones or calcinosis\(^2\). According to US Renal Data System (USRDS) data, projected survival of PH1 patients without transplantation is 40% at five years and 20% at nine years after diagnosis of ESRD\(^5\).

Patients with PH1 have markedly increased urinary oxalate excretion of greater than 1 mmol/1.73 m\(^2\) per day with some patients excreting as much as 1.5 to 3 mmol/1.73 m\(^2\) per day (normal oxalate excretion is <0.5 mmol/1.73 m\(^2\) per day)\(^6\). Accumulated body oxalate is the major determinant of long-term complications in patients with PH1\(^10\).
In patients who develop ESRD, removal of oxalate by standard maintenance hemodialysis (950–1400 mmol/day) is insufficient to compensate for the excessive oxalate burden (3,500–7,500 mmol/day) and systemic oxalosis occurs with deposition in extra-renal organs including the skin, blood vessels, bone, bone marrow, retina, myocardium, and skeletal muscle \(^3\).

Combined liver–kidney transplantation is the sole treatment option available to correct the metabolic abnormality, provide renal replacement therapy, and allow for normalization of oxalate excretion in patients with PH1. Combined liver–kidney transplantation provides improved graft survival compared to kidney transplantation alone. USRDS registry data report a significantly better 8-year death-censored graft survival rate of 76\% following liver–kidney transplantation compared to 47.9\% following isolated kidney transplantation \(^4\). European studies reported overall patient survival rates of 80\% at five years and 69\% at 10 years following liver–kidney transplantation \(^7\).\(^8\).\(^10\).

### Challenges faced
- The operation was a logistic nightmare.
- After being informed the availability of organ from KNOS at odd hour of Night. The entire Transplant team of Nephrologist, Urologist, Surgical & Medical gastroenterologist was at Red alert in KIMS, Trivandrum.
- Informed consent to organ retrieval, Induction to Explant & transplant was a race against time.
- Post Operative days were really tense and challenging.

### Conclusion
- We present this case to sensitize pediatricians regarding the entity of Combined Liver-Kidney Transplant as a feasible option in permanent cure of Primary Hyperoxaluria.
- The Mritasanjeevini programme of Govt. of Kerala, is designed to prioritize multiple organ transplants and thus these patients receive out-of-turn organ allotment, which is of great significance as in these cases.

### References

### Address for Correspondence
Dr. Satish B
Consultant, Nephrology
email: dr.midhunramesh@gmail.com
Abstract

The treatment of jugular foramen tumours is still an extremely challenging experience for skull base surgeons. This is because of their difficult-to-approach location, the proximity to lower cranial nerves, critical vascular structures and high vascularity of the tumours. These tumours may involve adjacent structures like jugular bulb, carotid artery, middle ear, petrous apex, clivus, infra temporal and posterior fossa. The evolutionary improvement in newer surgical approaches and innovations like Microneurosurgery with operating microscope, Bipolar electrocautery, safer Neuroanaesthesia, Arteriography, Retrograde jugular venography, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Endovascular embolisation and Radiotherapy have allowed safe resection of jugular tumours with reasonable morbidity and mortality.

Keywords: Microneurosurgery, neuroanaesthesia, endovascular embolization, radiotherapy

Introduction

The primary jugular foramen meningiomas are extremely rare lesions with fewer than 100 cases reported in the literature and accounts for only 4% of all posterior fossa meningiomas. A characteristic centrifugal pattern of spread and a permeative-sclerotic appearence of the bone margins of the jugular foramen are features that assist in differentiating these from more common jugular foramen tumours. On CT scans they appear isodense to the brain and on MRI studies they are typically isointense to hypointense on T1 weighted imaging. In our case report, a 10 year old boy diagnosed to have a left jugular fossa lesion measuring 3.1 x 3 cm presented with left ear pain and no neurological deficits. We accessed the tumour through a left mandibulotomy and posterior fossa approach. A subtotal resection of the tumour was done to avoid injury to jugular bulb and lower cranial nerves. Later on an adjuvant radiotherapy was given for the residual tumour.

Surgical Anatomy

The Jugular foramen, also known as the posterior foramen lacerum, is situated in the posterior fossa lateral to the carotid canal (Fig. 1). The walls of the jugular foramen are formed anterolaterally by the petrous bone and posteromedially by the occipital bone. It is more accurately described as a triangular canal with an endocranial and an exocranial opening. The jugular foramen is traditionally divided into a large posterolateral compartment (pars venosa) and a smaller anteromedial compartment (pars nervosa). Recently this view is modified by Katsura et al who has divided the jugular foramen into three compartments: two
venous compartments (large sigmoid part and a small petrous part) and one neural intrajugular compartment in between. At the junction of two venous compartments there are two bony prominences (intragular processes) arising from the temporal and occipital bones joined by a fibrous or osseous bridge, forming intrajugular septum.

The relationships between lower cranial nerves (IX - XII) and the major vessels, internal carotid artery (ICA), internal jugular vein (IJV), external carotid artery (ECA), and branches of vertebral artery (VA) are extremely complex at the level of jugular foramen and in the upper neck.

Case report

A 10 year old boy, presented with the history of left ear pain of 1 month duration. No history of trauma, headache, vomiting, tinnitus, impaired hearing, swallowing difficulty or hoarseness. No comorbidities.

On examination: Higher mental functions were normal. No focal neural deficits. Afebrile with stable vitals. There was fullness in left external ear canal visible through tympanum.

Pre op investigations were normal. Blood group: ‘A’ Positive.

The MRI Brain showed a 3.1 x 3 cm space occupying lesion in left jugular fossa extending superiorly eroding the jugular fossa and petrous bone into the middle ear cavity and extending inferiorly into the carotid space displacing the carotid anteriorly and superiorly (Fig.2,3). Intradural VII-VIII nerve complex was seen separately.
Pre-op Embolization

• Left External Carotid Artery injection performed through Right femoral access showed large tumour blush in the region of skull base supplied by Ascending Pharyngeal Artery (Fig.4,5).

• Posterior division arising from the proximal part of Internal Maxillary Artery was not embolised.

• Post embolisation angiogram showed no filling of the vascular bed and sluggish flow in the embolised parent arteries (Fig.6,7).

Surgical Procedure

Left Mandibulotomy

• Under general anaesthesia, patient in supine position, the head turned to the right side and
the neck extended with a sand bag under the left shoulder, sterile drapping was done.

- A curvilinear incision was made from the left mastoid region extending over the lower border of the mandible upto the chin along the superior skin crease of the neck and then rotated to the lower border of the mandible.
- Facial artery and vein were identified and ligated.
- Lip-split incision was made and the periostium was elevated from the mandible and the mental foramen was exposed (Fig.8).

Two 4 holed plates with gap were adapted one above and one below (fig 9) the mental foramen and a mandibulotomy was done between 33 and 34 (Fig.10,11).

- The mandible was swung around laterally to expose the posterior pharynx, the suboccipital region and the tumour (Fig.12).

Sub total Tumour Resection

- The tendon of the Digastric and the Mylohyoid muscle and the sternocleidomastoid muscle in the upper 1/3 were divided.
- The incision was then extended superiorly to the retromastoid region 1 finger breadth behind the mastoid. The muscles and fascia
were separated subperiosteally to expose the mastoid-stylomastoid groove and the suboccipital region.

- A burr-hole was made in the usual manner and a small craniectomy of 2 x 3 cm was done and the sigmoid sinus and the jugular bulb were exposed.
- The dissection was then carried down deeper in the retromandibular region to delineate the carotid sheath which was traced superiorly to reach the lesion.
- The lesion was splaying out the contents of the carotid sheath.
- The internal carotid artery was found to be pushed medially and superiorly by the lesion.
- The internal jugular vein was then dissected and traced proximally and was found to be partly compressed and encased by the tumour.
- A linear incision was then made over the tumour capsule and vascular grayish lesion with features of necrosis was removed preserving the nerve fibres (Fig. 13).
- While attempting to remove the superior part of the lesion there was injury to the sigmoid sinus and hence it was decided not to further pursue the lesion at that level.

- Bleeding was controlled with surgicel and gelfoam.
- The branches external carotid artery were gently separated from the tumour by dissection.
- A cuff of the tumour was then left behind at the jugular foramen near the skull base.
- After confirming the haemostasis surgicel was placed over the carotid artery and the internal jugular vein.
- The digastric, mylohyoid and sternocleidomastoid were then approximated.
- The mandible replaced and stabilised with the pre-adapted plates and fixed with six 2 x 8 mm and two 2 x 6 mm screws (Fig. 14).
• The wound was then closed in layers with 3-0 vicryl and 3-0 ethilon and monocryl.
• Patient came around from anaesthesia smoothly and two units of blood were transfused.

Postoperatively he remained stable with no neurological deficits. The follow up CT brain (Fig 15) showed post operative changes in the left retro-mastoid calvarium and adjacent soft tissue, residual ill-defined iso-dense lesion in the region of left jugular fossa, expanding and eroding jugular foramen and petrous bone, extending into neck in the carotid space. A soft tissue density was also seen in the left middle ear contiguous with jugular fossa lesion.

Discussion
The treatment of jugular tumours should always be tailored to each individual. This 10 year old boy presented only with left ear pain, without any neurological deficits. The increasing concern about the quality of life of this small boy has emphasized a thorough pre op evaluation and planning. A pre op endovascular embolization was done to prevent loss of blood during surgery and to have a near total resection of the tumour. But a cuff of tumour tissue was left behind at the jugular foramen to avoid injury to sigmoid sinus and injury to lower cranial nerves. Post operatively he improved well without focal neural deficits. An adjuvant radiotherapy was planned for the residual tumour after discussion in the tumour board with radiation oncologist. He underwent 29 fractions of radiation therapy, during which he had occasional vomiting. He gradually improved without any neurological deficits and returned to his routines. A long term follow up is needed to watch for any recurrence in future which is to be treated accordingly.

History
1840 : A small ganglion like structure in the initial part of the tympanic nerve was described by Valentin and named it as “Gangliolum Tympanicum” or ‘intumescentia gangliosa’ (r.1).
1878 : Krause demonstrated that this structure was not a ganglion, but a vascular tissue, resembling the carotid body and called it “die Glandula tympanica”. This structure resembled the ‘carotid gland’ (Glomus caroticum) and Krause named it as “tympanic gland”, as reported by Von Lushka (1862) (r.1).
1926 : De Castro was the first to suggest that the carotid body had a chemoreceptor function. The
later works of Heymans and Bouckaert (1939), Schmidt and Comroe (1940) and Dripps and Comroe (1944) confirmed it and also found out the existence of this function in paraganglion aorticum. These structures are sensitive to changes in pH and in oxygen and carbon dioxide tensions in circulating blood.

1941: Guild S.R had rediscovered the non-chromaffin paraganglionoma of the jugular bulb and described the glomus tissue as an ovoid body flattened in the adventitia of the dome of the jugular bulb and called these bodies as Glomus jugulare (r.2,3).

In a process of sectioning human temporal bones, Guild reported 50% of this tissue in the jugular bulb, 25% was found over the course of the tympanic branch of the glossopharyngeal nerve (Jacobson's nerve) and 25% was found throughout the auricular branch of the vagus nerve (Arnold’s nerve). This aspect explains the existence of ‘glomus tumours’ that occurred both in middle ear (glomus tympanicus tumours) and in the region of the jugular bulb (glomus jugulare tumours).

**Evolution of Surgical techniques**

During the initial periods, in 1930s, the surgical excision of glomus jugulare tumours was extremely challenging, ending in disappointing results in the majority of cases due to the complex anatomy of the region of the jugular bulb, the risk of haemorrhage during tumour dissection and lack of high definition images to delineate the tumour margins.

1930: Initially suboccipital approach was tried with removal of bone around jugular foramen to prevent excessive bleeding (r.4). A subtotal resection of the tumour followed by radiotherapy ended with resultant lower cranial nerve palsies.

1952: Capps reported a series of 5 cases, the first one had extensive tumour resection with mobilization of the facial nerve (this maneuver had not been tried previously), gaining proximal and distal control of the sigmoid sinus and jugular vein, followed by unsuccessful attempt to remove jugular bulb (r.5).

1953: Albernaz and Bucy reported a case of hearing loss with compression of jugular foramen. During surgery an experience of non-visualisation of the tumour abnormalities of lower cranial nerves was occured and following local manipulation, the patient suffered a cardiac arrest during closure, drew attention. The autopsy revealed a glomus jugulare tumour of 1.0 x 2.0 cm (r.6).

1960 - 1970: The newer innovations in the field of neurosurgery in the form of Operating microscope, Microneurosurgery, Bipolar electrocautery, safer Neuroanaesthesia, arteriography, retrograde jugular venography, Computed Tomoraphy (CT), Magnetic Resonance Imaging (MRI) with Multidisciplinary approaches improved the surgical outcome of the patients better than before and also gained confidence of the surgeons to proceed with multifocal approaches.

1960: House and Farrior (r.7,8) described hearing preservation surgery by preserving the bony portion of the auditory canal, the modified endaural post auricular hypo tympanotomy which exposes the facial recess and the hypotympanum for resection of the tumour.

1965: Gejrot gave a fundamental contribution which persists until now as a crucial component of modern surgical treatment of glomus jugulare tumour, stressing the importance of maintenance of the sigmoid sinus medial wall at the jugular bulb, in an effort to protect the cranial nerves running under the wall (r.9).
1969: McCabe and Fletcher proposed that the size and extent of the tumour were the determining factors for selecting the most appropriate surgical approach.

**Tumour Embolization**

Despite the advancements in surgical techniques, the high vascularity of the jugular tumour was a major challenge in controlling the haemorrhage during surgery.

In 1975, Hilal et al (r.10) published the super selective arterial embolization of the jugular foramen tumours which remarkably reduced the tumour vascularization and paved a way for safer surgery.

In 1989, Murphy and Brackmann reported a series of 35 patients with pre operative embolization, concluded that there was significant reduction of blood loss and intraoperative time and higher rate of total tumour resection (r.11).

**Radiotherapy**

In 1973, Spector et al (r.12), reported that the radiation therapy had relatively little effect on the tumour cells and that the main effect of radiation therapy is a vascular injury secondary to irradiation. In addition, it has been shown that the catecholamine secretion is not affected by the radiation application.

Fractionated irradiation may reduce the risk of actinic complications. The irradiation treatment modality, currently used is radiosurgery, gamma knife (Gamma knife, LINAC and Cyberknife).

The Radiotherapy as a primary treatment is indicated in:

1. Older age group people
2. Surgical contraindications including medical and personal reasons
3. Unresectable and bilateral large tumours
4. The major vascular risk visualised by a failed balloon occlusion test or unique venous flow

**Classifications**

The two most commonly used classifications of glomus tumours are those proposed by Fisch and colleagues and Jackson et al, based primarily on tumour location and size.

<table>
<thead>
<tr>
<th>Fisch Grade</th>
<th>Extent of Tumor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Middle ear cleft (glomus tympanicum)</td>
</tr>
<tr>
<td>B</td>
<td>Tympanomastoid area with no infralabyrinthine compartment involvement</td>
</tr>
<tr>
<td>C</td>
<td>Infralabyrinthine compartment of the temporal bone and extending into the petrous apex</td>
</tr>
<tr>
<td>C1</td>
<td>Limited involvement of the vertical portion of the carotid canal</td>
</tr>
<tr>
<td>C2</td>
<td>Invasion of the vertical portion of the carotid canal</td>
</tr>
<tr>
<td>C3</td>
<td>Invasion of the horizontal portion of the carotid canal</td>
</tr>
<tr>
<td>D1</td>
<td>Intracranial extension &lt;2 cm in diameter</td>
</tr>
<tr>
<td>D2</td>
<td>Intracranial extension &gt;2 cm in diameter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Glasscock-Jackson Grade</th>
<th>Extent of Tumor</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Involves the jugular bulb, middle ear, and mastoid; generally small in size</td>
</tr>
<tr>
<td>II</td>
<td>Extends under the internal auditory canal; intracranial canal extension possible</td>
</tr>
<tr>
<td>III</td>
<td>Extends into the petrous apex; intracranial canal extension possible</td>
</tr>
<tr>
<td>IV</td>
<td>Extends beyond the petrous apex into the clivus or intratemporal fossa; intracranial canal extension possible</td>
</tr>
</tbody>
</table>

**Conclusion**

The discussion in this case presentation revealed a sub-total resection of the jugular foramen meningioma followed by adjuvant radiotherapy for residual tumour prevented injuries to the neurovascular structures and lower cranial nerve palsies. The precise diagnosis, endovascular embolization, a selective surgical approach and resection of the tumour, adjuvant radiotherapy and a long term follow up helps the patient to return to a good quality of life. The treatment with radiotherapy or radiosurgery alone remains controversial.
References
11. Murphy TR, Brackmann DE. Effects of pre operative embolization on glomus jugulare tumours. Laryngoscope. 1989;99:1244-7

Address for correspondence
Dr. Patel Vineeth Kumar Thakoorbai
Resident, Neurosurgery
email: drpatelvineethkumar@gmail.com
contact: 8589041107

Obstetrics and Gynaecology

• Breast Clinic
• Antenatal Clinic
• Post natal and Family planning
• Menopause Clinic
• High risk obstetrics
• Endoscopic facility
• Birth suite
• Transportation facility and car
• Adolescent Clinic
Melioidosis: An emerging infection

Dr. Elsa George
Dr. A Rajalakshmi

Abstract
Melioidosis is an endemic infection in India, though largely remains under diagnosed. It can have varied clinical presentations. It is not uncommon hence should have a high degree of suspicion in patients who have a history of exposure to risk factors and also in those who are not responding to the usual antibiotics. The treatment includes 2 phases and requires long term follow up. When detected early and treated appropriately, it carries good outcome. Delayed diagnosis can lead to fulminant bacteremic disease which could be fatal. Here we present few interesting cases of melioidosis.

Keywords: Melioidosis, B. pseudomallei, soil, water, storm, diabetes mellitus, culture, ceftazidime, cotrimoxazole.

Introduction
Melioidosis is an infectious disease caused by the bacterium Burkholderia pseudomallei. It is a soil and water pathogen and transmitted to humans through inoculation or inhalation. This disease is considered endemic in India though largely remain under reported. The most common presentation is pneumonia and bacteremia. Chronic presentation include- abscesses, septic arthritis, osteomyelitis. The major risk factors are diabetes mellitus, liver disease, renal disease, chronic lung disease. The representative cases presented here highlights the need for increased awareness for suspecting melioidosis in our clinical practice.

Case report
Case 1
A 43 year old male with newly detected diabetes mellitus, uncontrolled and with h/o travel to Chennai during the cyclone 'Vardah'. Later he developed fever, cough, vomiting and was admitted to the local hospital. He was referred here in view of persistent fever. Two days after hospitalisation he had worsening oxygen saturation, hypotension and had to be intubated. On the same day he had also developed new skin lesions which were papulo-pustular distributed over the face and upper chest and was suspected to have varicella pneumonia. The definite exposure history to storm made us suspect melioidosis in the differential diagnosis. Other etiologies considered were Staphylococcus and Klebsiella. Labs showed a total count of 20200, with 94% polymorphs and CRP of 35. The chest x-ray showed non-homogenous opacity on the right side and the CT chest showed multiple bilateral nodular consolidation predominantly on the right side. (Fig.1) He was initiated on meropenem, doxycycline and teicoplanin. Later cultures from skin lesions, endotracheal tube and blood grew B. pseudomallei. (Fig. 2 & 3). He was
A 54 year old male a known case of diabetes mellitus, COPD who does agricultural work, presented with complaints of fever, cough and expectoration of 1 month duration and was treated outside with cefperazone+sulbactum. Labs showed a total count of 7700 with 72% polymorphs and CRP of 166. Chest x-ray taken showed a cavitary lesion on the right lower zone mimicking that of tuberculosis. (Fig. 4) The sputum smear for AFB and CB NAAT (cartridge based nucleic acid testing) sent were negative for MTB. Blood cultures were negative. He was treated with piperacillin+tazobactum and clarithromycin. He had pain in the right thigh, which was considered as diabetes related neuropathy. He was discharged on empiric ATT. A week later he was re-admitted with persistent fever, cough and thigh pain. MRI thigh revealed osteomyelitic changes of the lower femur (Fig. 5) from where a tissue biopsy was taken and found to be Staphylococcus aureus on culture. Cultures were repeated later and found to be sensitive to ceftazidime, given for a period of 2 weeks, followed by cotrimoxazole for a period of three months. He improved clinically over the period of time.

(Consultants involved in the care- Dr. A. Rajalakshmi and Dr.Muraleedharan)
Case Report

taken that proved melioidosis. He was initiated on ceftazidime based on sensitivity reports and given for a period of 2 weeks resulting in clinical improvement of the patient. He was also given a combination of cotrimoxazole and doxycycline for 6 months. Patient stopped oral medications after 2 months and reported back with persistent osteomyelitis, repeat culture grew B. pseudomallei – highlighting the importance of compliance with long term oral therapy, difficulty in eradication and recurrences- behaving like tuberculosis!

(Consultants involved in the care – Dr. A. Rajalakshmi, Dr. Ranjith Unnikrishnan)

Discussion

Melioidosis is caused by B.pseudomallei, a Gram-negative bacterium that resides mainly in soil and becomes air-borne during heavy rainfall. The south and south-east Asian countries and northern Australia are considered as endemic regions for melioidosis. (Fig. 6) It can have varied clinical presentation from being asymptomatic to chronic visceral or soft tissue abscesses and pneumonia. Outbreaks of melioidosis have been described following heavy rainfall and floods. Exposure occurs through percutaneous inoculation, inhalation and ingestion (rarely). The disease and outcome are closely related to risk factors especially diabetes mellitus and the others such as chronic lung disease, chronic liver disease, chronic kidney disease and alcoholism. Both the patients described above were diabetic. Studies have shown than most infections with B.pseudomallei is asymptomatic and in those who are symptomatic, 85% present with acute illness and 11% chronic (>2months). Over half of the patients are bacteremic and the most common clinical presentation is pneumonia. Culture of blood and other appropriate sample is required for diagnosing melioidosis. The treatment includes the initial intensive phase of 2 weeks with ceftazidime which forms the backbone of intensive phase and can be modified based on the sensitivity reports, followed by eradication phase with cotrimoxazole alone or in combination with doxycycline for a period ranging from a minimum of 3 months to 6 months.

In KIMS, we have 12 documented cases of melioidosis with varied presentations. With better understanding and improved culture methods, this disease is more and more recognised.

References

1. Principles and Practice of Infectious Diseases. Mandell, Douglas, Bennett

Address for correspondence
Dr. Elsa George
DNB Resident, Internal Medicine
contact: 9446197784
e-mail: elsageorge.cmc@gmail.com
Abstract

Hyperhidrosis, is sweating in excess than that is required for normal thermoregulation. We had a 32-year-old male patient suffering from hyperhidrosis who had symptoms such as cold limbs and profuse sweating of left lower limb. After investigations and anaesthetic checkup, patient underwent retroperitoneoscopic lumbar sympathectomy. L2, L3, L4 ganglions were removed. In post-op period the patient’s symptoms improved drastically. Temperature of left lower limb improved to 97.6 F from the pre-operative level of 88 F and his limb became pinkish and not having issues of sweating. Retroperitoneoscopic approach is better than open as there is no blood loss and cutting of muscles. The patient goes home early and this approach is safer than transperitoneal approach as the chance of bowel injury is less. Approaching sympathetic chain is also relatively easier for Surgeon in case of retroperitoneoscopy.

Keywords : Hyperhidrosis, retroperitoneoscopic approach, lumbar sympathectomy.

Introduction

Hyperhidrosis, is sweating in excess than that is required for normal thermoregulation. It begins in either childhood or adolescence. Although any site on the body can be affected by hyperhidrosis, the sites most commonly affected are the palms, soles, and axillae. Hyperhidrosis exists in 3 forms: Emotionally induced hyperhidrosis (in which it affects the palms, soles, and axillae),\(^1\)\(^2\) Localized hyperhidrosis, Generalized hyperhidrosis. Hyperhidrosis often causes great emotional distress and occupational disability for the patient, regardless of the form. It affects both sexes and affects persons of all ages. In a study of 850 patients with palmar, axillary, or facial hyperhidrosis, 62% of patients reported that sweating began since before they could remember; 33%, since puberty; and 5%, during adulthood.\(^3\)

Case Report

32-year-old male patient from Lakshadweep had reported to us with complaints from his childhood and was operated on right side retroperitoneoscopic lumbar sympathectomy before one year by same team. His complaints resolved completely on the right side. His symptoms are cold limb, profuse sweating of the left lower limb. When he used casual slippers, his slippers slip off and when he wears shoe, it pours out. The temperature in the lower limb was recorded pre-operatively and found to be very low. (less than 88 F) (Fig. 1) Routine blood investigations and anaesthetic check-ups were done, he was posted for retroperitoneoscopic...
Patients symptoms improved drastically in the post-op period. His temperature improved to 97.6 F and his limb became pinkish and was not having the issues of sweating. Patient was discharged on POD-2.(Fig. 2)

Discussion

Anatomy

The sympathetic trunk lies lateral to the vertebral bodies for the whole length of the vertebral column. It communicates with the anterior rami of spinal nerves via rami communicants. The sympathetic trunk permits preganglionic fibres of the sympathetic nervous system to ascend to spinal levels superior to T1 and descend to spinal levels inferior to L2/3.4,5 The superior end of it is continued upward through the carotid canal into the skull, and forms a plexus on the internal carotid artery; the inferior part travels in front of the coccyx, where it converges with the other trunk at a structure known as the ganglion impar.Along the length of the sympathetic trunk are sympathetic ganglia known as paravertebral ganglia. The sympathetic trunk is a fundamental part of the sympathetic nervous system, and part of the autonomic nervous system. It allows nerve fibres to travel to spinal nerves that are superior and inferior to the one in which they originated. Also a number of nerves, such as most of the splanchnic nerves, arise directly from the trunks.

Fig 1: Showing the temperature recording of left lower limb as low, also feet looks pale compared to right foot showing 97.1 and is pinkish.

Fig 2: Post Op limb temperature is 97.6 and pinkish compared to previously operated side.

Fig 3: Sympathetic chain anatomy.
Pathophysiology
Hyperhidrosis may be idiopathic or secondary to other diseases, metabolic disorders, febrile illnesses, or medication use.
Generalized hyperhidrosis may be secondary to numerous conditions including the following: neurologic or neoplastic diseases, spontaneous periodic hypothermia and hyperhidrosis. Localized unilateral or segmental hyperhidrosis is rare and of unknown origin. The condition usually presents on the forearm or forehead in otherwise healthy individuals, without evidence of the typical triggering factors found in essential hyperhidrosis. Localized hyperhidrosis may also be associated with the following: gustatory stimuli, eccrine nevus.

Diagnosis/Evaluation
Diagnostic criteria favouring primary hyperhidrosis include excessive sweating of 6 months or more in duration, with 4 or more of the following:
1. Primarily involving eccrine-dense sites (axillae/palms/soles/craniofacial)
2. Bilateral and symmetric
3. Absent nocturnally
4. Episodes at least weekly
Visible signs of hyperhidrosis are clear.
If direct visualization of the affected areas by hyperhidrosis is desired, the iodine starch test may be used. This test requires spraying of the affected area with a mixture of 0.5-1 g of iodine crystals and 500 g of soluble starch. Areas that produce sweat turn black.
If generalized hyperhidrosis is noted one must search for underlying causes by doing Thyroid Function Test, Blood glucose, Urine catecholamines, Uric acid levels, Purified Protein Derivative, and Chest x-ray to rule out Tuberculosis.

Management
There are two options:
1. Medical management.

2. Surgical management.
Medical management
Hyperhidrosis treatment is challenging for both the patient and the physician. Both topical and systemic medications have been used.
Topical agents for hyperhidrosis therapy include topical anticholinergics, boric acid, 2-5% tannic acid solutions, resorcinol, potassium permanganate, formaldehyde, glutaraldehyde, and methenamine. Systemic agents used to treat hyperhidrosis include anticholinergic medications such as propantheline bromide, glycopyrrolate, oxybutynin and benztropine. They are effective because the preglandular neurotransmitter for sweat secretion is acetylcholine (although the sympathetic nervous system innervates the eccrine sweat glands).
Other treatment options for hyperhidrosis include iontophoresis and botulinum toxin injections. Botulinum toxin injections are effective because of their anticholinergic effects at the neuromuscular junction and in the postganglionic sympathetic cholinergic nerves in the sweat glands. Radiofrequency ablation and use of microneedle radiofrequency therapy for axillary hyperhidrosis has been recommended.

Surgical management
Sympathectomy has been used as a permanent effective treatment since 1920. Usually, it is reserved for the final treatment option. Sympathectomy involves the surgical destruction of the ganglia responsible for hyperhidrosis.
 Lumbar sympathectomy is an effective treatment for lower limb hyperhidrosis. There are two approaches: open and minimal access approach. In case of minimal access surgery there are transperitoneal and retroperitoneoscopic approach.

Retroperitoneoscopic approach
The patient is placed in a lateral position. A 15-mm incision is made just below the 12th rib,
and retroperitoneal space is created using blunt finger dissection. A custom-made, large balloon is inserted and inflated with the equivalent of 750 mL to 1000 mL of air. The second 10-mm port is placed in line with the first port above the iliac crest. The third and fourth 5-mm ports are placed anterior to the first 2 ports. Peritoneum is retracted anteriorly. The medial border of the psoas muscle is used as a landmark and a chain identified immediately medial to it. The second to fourth lumbar sympathetic ganglia are removed with the intervening chain. The port sites are closed without a drain.

Fig 4: Port placement

Fig 5: Intra-op picture showing sympathetic chain

Conclusion

Retroperitoneoscopic approach is better than open, as there is no cutting of muscles, also the blood loss is less, the patient has less post-op pain, also chance of wound infection are less comparatively. The patient goes home early, and goes to work the next day. Its comparatively safer than transperitoneal as the chance of bowel injury and infection are less as we are in the retroperitoneal space. Approaching sympathetic chain is also relatively easier for surgeon in case of retroperitoneoscopy.

References


Address for correspondence
Padmakumar Ramakrishnapillai
Sr. Consultant, Minimally Invasive Surgery
e-mail : drrpadmakumar@gmail.com
contact : 09846320370
Surfactant Replacement Therapy

Dr. Jyoti Prabhakar

Background
Respiratory distress syndrome (RDS) due to surfactant deficiency is a major cause of morbidity and mortality in preterm babies. Surfactant therapy has been a significant advance in the management of preterm infants with respiratory distress syndrome and has become established as a standard part of the management of such infants. Secondary surfactant deficiency also contributes to acute respiratory morbidity in late-preterm and term neonates with meconium aspiration syndrome, pneumonia/sepsis, and also pulmonary haemorrhage; surfactant replacement may be beneficial for these babies also.

Function of Surfactant
Surfactant greatly reduces the surface tension of the alveoli, thus preventing the alveoli from collapsing during expiration. Surfactant thus stabilizes alveoli, improving oxygenation and decreases the need for mechanical ventilation, pneumothorax and improves survival in babies with RDS between 24 and 34 weeks gestation. Surfactant therapy decreased mortality rates most effectively in infants born at less than 30 weeks gestation or with birth weight <1250 g.

Types of Surfactant
Three types of exogenous surfactant are available:
1. Natural surfactant – surfactant derived from animal sources,
2. synthetic surfactant without protein components, and
3. Synthetic surfactant containing protein components.

Mammalian surfactant is composed of 80% phospholipids, 8% neutral lipids and 12% protein. Nearly 60% of phospholipids are Dipalmitoyl phosphatidylcholine (DPCC) and DPCC is the most effective component in decreasing surface tension. Surfactant proteins are of 4 types, SP-A, SP-B, SP-C and SP-D. SP-A and SP-D play important role in defence against inhaled pathogens. SP-B and SP-C promotes phospholipids adsorption, enhancing the formation of a stable surface film.

Natural surfactants are obtained by either lung lavage or by mincing animal lung tissue and subsequently purified by lipid extraction. The purified lipid preparation retains SP-B and C, neutral lipids and DPCC.

The 3 natural surfactants which are commercially available are
- Survanta-bovine lung extract
- Neosurf–calf lung extract
- Curosurf-porcine lung extract

Reviews have shown that natural surfactants are a more superior choice in babies with RDS when compared to the currently available synthetic surfactants.
**Indications for Surfactant**

RDS: As per AAP (2014) guidelines, it is to initially start Nasal CPAP in any spontaneously breathing preterm baby with RDS. Surfactant is indicated if the baby develops apnoea or increase in oxygen requirement > 40% or higher to maintain oxygen saturation above 90% in spite of maximum PEEP (8cm of water) on CPAP.

Other indications: in Late Preterms and Term babies with Meconium Aspiration Syndrome, Pneumonia and Pulmonary haemorrhage.

**Timing of Surfactant**

Surfactant is divided into:

a) Prophylactic
b) Early Rescue
c) Late Rescue.

Prophylactic Surfactant strategy is administration of surfactant to an infant who is at increased risk of developing RDS even before the onset of symptoms. This is typically given within the initial 15-30 minutes of life, but only after the baby has been stabilized.

Early Rescue strategy is defined as surfactant therapy to premature infants with respiratory distress suggestive of RDS, administered within the initial 2 hours of life.

Prophylactic surfactant has shown to be better than rescue in older trials but the new approach of stabilizing babies on CPAP first and giving surfactant as early rescue, if required has been found to be superior to prophylactic surfactant in recent studies.

Late Rescue strategy is administration of surfactant beyond 2 hrs of life.

Using CPAP immediately after birth with subsequent selective surfactant administration may be considered as an alternative to routine intubation with prophylactic or early surfactant administration in preterm infants (AAP 2014 recommendation). AAP also recommends that if it is likely that respiratory support with a ventilator will be needed, early administration of surfactant followed by rapid extubation is preferable to prolonged ventilation.

**Technique of administration**

Ensure correct endotracheal tube placement.

Surfactant administration procedures may be complicated by transient airway obstruction, oxygen desaturation, bradycardia, and alterations in cerebral blood flow and brain electrical activity. The delivery of surfactant can also result in rapid improvement in lung volume, functional residual capacity, and compliance. Thus, anticipatory changes in mechanical ventilator settings may be necessary to minimize the risks of lung injury and air leak. Clinicians with expertise in these procedures should be responsible for surfactant administration whenever surfactant is given.

2014 AAP statement reported that “the optimal method of surfactant administration in preterm infants has yet to be clearly proven.

At present Intratracheal Rapid bolus technique – in single aliquot or multiple aliquots remains the recommendation for surfactant administration. (better distribution of the surfactant and a faster rate of improvement of oxygenation and lung compliance was seen with rapid bolus technique compared to slow bolus or continuous infusion) Improved homogenesity is achieved with supine position of the baby compared with upright positioning.

Other techniques of surfactant administration,LIST /MIST(Less Invasive Surfactant therapy/Minimally Invasive Surfactant therapy).

These include use of aerosolized surfactant preparations, laryngeal mask airway aided delivery of surfactant, instillation of pharyngeal surfactant, and administration of surfactant using thin intratracheal catheters or feeding tubes.

Eventhough theoretically these methods could allow administration of surfactant without intubation...
in spontaneously breathing infants, because of lack of good quality evidence these techniques are still not recommended for routine clinical use.

What is the optimal dose and preparation of surfactant?
The optimal dose of surfactant is 100 mg/kg body weight of phospholipids. Porcine surfactant may be administered at a higher dose 200 mg/kg. Eventhough studies have shown that Porcine surfactant has an edge over the other surfactants by decreasing the oxygen requirement faster, all the natural surfactants seem to be equally effective from long term outcomes point of view.

When will you administer repeat dose of surfactant?
A repeat dose may be considered after 6 hours if the baby is still requiring high ventilator/oxygen need. A Cochrane meta-analysis on comparison of multiple versus single dose of natural surfactant suggested a significant reduction in the risk of pneumothorax and a trend towards reduction in the risk of mortality in the multiple doses group of preterm neonates. However, there is limited evidence to suggest what criteria we should use for giving further doses of surfactant. Uptodate recommends administration of repeat dose of surfactant if baby is still intubated and has FiO2 requirement more than 30 percent.

What should be the nature of respiratory support after surfactant administration?
INSURE: Intubation, Surfactant administration and Rapid Extubation (within 3-5 mts)

INSURE approach is recommended for surfactant administration where intubation of the trachea is done only for administration of surfactant. The INSURE strategy is widely used throughout the world. In randomized clinical trials performed before 2008, the INSURE approach, compared with rescue surfactant administration in infants with RDS, was associated with a significantly reduced need for mechanical ventilation and a decreased need for oxygen requirement. However, rapid extubation after surfactant administration may not be achievable or desirable in babies less than 28 weeks and decisions to extubate should be individualized.

Other indications for surfactant therapy
Meconium aspiration syndrome
Pneumonia

Who can administer surfactant?
Administration of surfactant can be associated with the following complications, Endotracheal tube block, cyanosis, apnoea, bradycardia etc which can be life threatening. Hence, surfactant administration must be done by units having adequate infrastructure, asepsis and meticulous doctors and nursing care. There should be ongoing regular monitoring as surfactant administration will cause improved lung compliance, which can result in pneumothorax if ventilator settings are not adjusted.

References
2. Surfactant Replacement Therapy for Preterm and Term Neonates with Respiratory Distress Richard A. Polin, MD, FAAP, Waldemar A. Carlo, MD, FAAP, COMMITTEE ON FETUS AND NEWBORN
5. NNF guidelines. 2010
**Infected complications in single dose versus three doses of prophylactic antibiotics in caesarean section and hysterectomy - A prospective study**

**Dr. Asima khan**
**Dr. Syamala devi**

**Department of Obstetrics and Gynaecology**

**Introduction**
Infectious complications following LSCS and hysterectomy are significant source of morbidity and potential mortality, hence role of prophylactic antibiotic is well established however the emerging antibiotic resistance is a major cause of concern and thus judicious use of antibiotic becomes imperative for healthcare professionals.

**Objective**
Primary objective
To assess incidence of Surgical site Infection (SSI) in single dose versus three doses.

Secondary objective
To look for other infective complications like febrile illness, endometritis, urinary tract infection, vaginal cuff cellulitis, respiratory tract infections and sepsis.

**Study design**
Prospective observational study. Sample size required for the study was 492.

**Methodology**
The study conducted in the department of obstetrics and gynecology Kerala institute of Medical Sciences (KIMS) Trivandrum from June 2016 to May 2017. A total of 492 patients were included in the study. Patients were grouped in two groups. Group I - single dose of antibiotic (225) and Group II - three doses of prophylactic antibiotics (267). Patients with LSCS -followed up at 6 weeks or earlier if indicated. And patients with hysterectomy-followed up at 4 weeks or earlier. All data was entered into MS Excel and analyzed using the statistical software SPSS version 16.0. A p-value less than 0.05 was considered statistically significant. The two groups were compared for development of infective complications.

**Results**
The incidence of SSI in Group I and Group II- LSCS at 72 hours/discharge (p= 0.176) and at follow up –was not statistically significant (p=0.137). similarly the incidence of SSI in Group I and Group II- Hysterectomy at 72 hours/discharge (p= 0.407) and at follow up (p=0.691) was statistically not significant. Only one patient (0.8%) in Group II- Hysterectomy who had an organ space infection. The incidence of UTI in two groups of LSCS was comparable, p= 0.876 And in two groups of hysterectomy was p= 0.671. Incidence of febrile illness was almost similar Group I and Group II- LSCS (p= 0.842) Incidence of febrile illness was also comparable Group I and Group II- Hysterectomy (P=0.681). Vault cellulitis -p= 0.189. We had zero percent incidence of endometritis in LSCS in either of the groups.

**Conclusion**
The prophylactic single dose antibiotic is as effective as three doses of antibiotics in reducing the infective complications after LSCS and hysterectomy.
Neurological Rehabilitation
Comprehensive multidisciplinary rehabilitation for patients with brain, spinal cord or peripheral nerve injuries that extends from hospital care to home care.

Paediatric Rehabilitation
“Children with Special Needs Unit” for providing comprehensive medical and surgical care for children with disabilities.

Sports and Exercise Medicine
Sports Fitness Clinic for medical assessment and individualized exercise regimes. Sports Injuries Clinic for management and rehabilitation of sports and exercise related injuries.

Trauma Rehabilitation
Rehabilitation of patients after accidents and injuries, starting from the ICU, extending to home based therapy after discharge.

Musculoskeletal Rehabilitation
Most effective care for conditions like rheumatoid arthritis, back pain and neuropathic pain.

Hand Rehabilitation
Specific rehabilitation protocols for patients after tendon transfers, repairs, corrections, amputations and other hand injuries.

Burns Rehabilitation
Provide the most effective and compassionate rehabilitation for patients with burns, in collaboration with Plastic surgeons.

Cardiac Rehabilitation
Rehabilitation after myocardial infarction or coronary surgery, including home based rehabilitation programme.

Pulmonary Rehabilitation
Increase exercise tolerance and improve quality of life of patients with COPD, Asthma and other respiratory diseases.

Prosthetic and Orthotic Centre
Prescription and fitting of world class artificial limbs in collaboration with international suppliers like Ottobock, Germany.

Community Based Rehabilitation
Provision of aids, home modifications and home based rehabilitation for patients after discharge from the hospital.

Telemedicine Consultation
Telemedicine consultation and follow-up for patients in India and abroad for easy access to our rehabilitation doctors.
Thermal regulation in hospitalized stable preterm using isothermal mattress - A randomized control trial

Dr. Shobha Vijayan  
Dr. Sujith Kumar Reddy G V  
Dr. Femitha P  
Dr. Jyothi Prabhakar  
Dr. Naveen Jain

Abstract
Background-Radiant warmer is the standard of care for thermoregulation of stable preterm babies. Isothermal mattress has been demonstrated to be effective in thermoregulation during transport of neonates. The device is handy, doesn’t require to be plugged to electric supply continuously. If found to be similar in efficacy to radiant warmer, it will decrease the need to be facility dependent and at the same time reduce cost of care and risk of infections. India needs an effective alternate thermoregulation device that can reach babies at all levels of health care.

Objectives
Primary objective
To compare hypothermia or hyperthermia episodes (axillary temperature <36.50 C or >37.50C respectively) in stable preterm babies nursed in either radiant warmer (RW) or in cocoon warmer (CW); in the intervals between kangaroo mother care (KMC) sessions.

Secondary objectives
1. To compare physiological instability events over one week (apnea, bradycardia, tachycardia, feed intolerance) in preterm babies nursed in cocoon warmer (CW) compared to radiant warmer (RW) in intervals between kangaroo mother care (KMC) sessions.

2. To compare weight gain over one week, when nursed in cocoon warmer (CW) compared to radiant warmer (RW) in intervals between kangaroo mother care (KMC).

Study design - Prospective, open label randomized controlled trial
Study period - 22 months (1st August 2014 – 31st May 2016)
Settings - Step down unit of a level IIIB NICU
Participants-Stable hospitalized preterm babies with birth gestation between 29 to 32 weeks

Inclusion criteria
Preterm babies with birth gestation 29 - 32 weeks, whose parents gave consent and who met the following criteria:

Stable preterm babies
a. At least 7 days of life at enrollment (for skin maturity) AND
b. Stable for 72 hours prior to enrollment (no apnea, bradycardia, tachycardia, feed intolerance or investigation for new infection) AND
c. Off intravenous fluids / oxygen
Predicted hospital stay of at least one more week, once the above criteria had been met.

Exclusion Criteria
- Abdominal wall defect
• Meningomyelocele
• Blistering skin disorders

Sample Size
We conducted a study comparing proportion of hypothermia and hyperthermia events between (CW) and (RW) with 1 control per case. There were no previous studies which reported incidence of hypothermia or hyperthermia events in stable preterm babies nursed under radiant warmer. We expected a prevalence of hypothermia or hyperthermia events in our preterm babies nursed under radiant warmer to be 2.5% based on short observations made prior to the study.

We considered that CW would be clinically comparable to RW if prevalence of hypothermia and hyperthermia events were not more than 4.5%; a difference of 2 % or less between the two devices.

At a power of 80% and alpha error of 0.05, a sample size of 1325 temperature records, in each arm, were needed to be studied to disprove the null hypothesis.

Data collection technique and tools
Enrollment: The eligible preterm babies would be shifted to KMC room and would be initiated on KMC for as long as possible for the parents/family members. In the time KMC is not possible by parents/family members, babies would be kept warm in either warming device - Radiant warmer (RW) or cocoon warmer (CW). Parents would be introduced to the devices and their consent would be obtained.

Once enrolled, babies were stratified into two groups based on gestation – 29 - 30 wks and 31 - 32 wks. Babies were then randomized into RW or CW using a computer generated random table chart.

Randomization
Post stratification, block randomization (blocks of 10 random numbers for each strata) using computer generated random charts was employed to maintain equivalence of group sizes, which was displayed in the unit (open label trial). Neonates who were enrolled and stratified were randomized to one of the two groups - RW or CW.

Blinding
Blinding was not possible due to the nature of intervention in our study.

Interventions
The principle investigator allocated the eligible babies to the intervention as per the block randomization chart displayed in the unit. Point of randomization occurred once baby was stable (defined in inclusion criteria), parent consent had been taken and stratification had been done.

Cocoon warmer (CW) (Isothermal mattress, EmbraceTM): CW has two parts - a gel pack insert and a sleeping bag. The gel pack insert was heated for one hour prior to use after which it is placed in the sleeping bag and is ready for use. The device can be used for four hours at a stretch after which a new preheated gel pack needs to be inserted.

Radiant warmer (RW): The RW has a quartz heating element which provides radiant warmth to the baby. The thermistor probe was attached to the skin of the baby’s abdomen which sensed the skin temperature and provided appropriate heater output as per the baby’s need.

Room temperature – A room temperature monitoring device was available in the KMC room and it was maintained at 26 – 28°C. In both groups, the babies were appropriately clothed with caps, socks, mittens and cotton dress and wrapped in a single layer of thin cotton blanket.
Temperature measurement

Axillary temperature (using mercury glass thermometer with accuracy of 0.2 °C in axilla for 3 minutes) was recorded at start (0 hour) of nursing in CW or RW device. Subsequently axillary temperatures were recorded at end of 1, 2 and 4 hours of baby being nursed in CW or RW devices. At the end of four hours if it was not possible to initiate KMC, a new cycle of temperature observations were made at 0, 1, 2 and 4 hours. This was necessary because the CW gel packs were replaced every four hours as per manufacturer recommendation.

If at any point of time a family member returned, the baby was removed from RW or CW and given for KMC. After the period of KMC, temperature records were again commenced as 0, 1, 2 and 4 hour values. Babies in the CW group would also have a newly charged gel pack for maintaining temperature.

Babies were continuously monitored by a thermistor probe (Draeger®) attached to the skin over right hypochondrium. Out of range temperatures were confirmed by axillary temperature. If hyperthermia or hypothermia was confirmed, corrective actions were taken as per safety protocol.

Monitoring for physiological stability

Babies would continue to be nursed in the allocated warmth device (RW or CW) for 7 days of the study period. Physiological variables - changes in heart rate (bradycardia < 110 beats per minute or tachycardia > 160 beats per minute), episodes of desaturation (< 90% corrected by stimulation, PPV or use of oxygen), apnea (cessation of breathing associated with hypoxia < 90% or bradycardia < 110 beats per minute), feed intolerance (vomiting or increase in abdominal girth > 2 cm with systemic signs leading to decrease in feed volume or withholding feeds) would be continuously monitored.

Weight recording was done at entry and exit in the respective care group. Babies were undressed completely and weighed on a weighing scale of 5 gram accuracy. The weight gain per day was calculated.

Definitions

Euthermia 36.5 – 37.5°C using axillary temperature

Hypothermia < 36.5°C, confirmed by axillary temperature

Hyperthermia > 37.5°C confirmed by axillary temperature

Primary outcome: Difference in proportion of episodes of hypothermia (< 36.5°C) or hyperthermia (> 37.5°C) in radiant warmer (RW) and cocoon warmer (CW) group in the first 24 hours after enrollment.

Secondary outcomes

1. Difference in physiological instability events in the week after enrollment in the radiant warmer (RW) and cocoon warmer (CW) group.

2. Difference in weight gain (in grams / day) after one week of entry into study in RW and CW group.

Data Analysis

Data was collected and entered in SPSS version 19 (statistical package for social sciences). Primary and secondary outcomes were compared using a chi square test. Independent-samples T-test was used to compare means. The power of the study was 80% and a p value of < 0.05 was considered significant.
Results
Total number of babies enrolled - 125
Number of temperature events recorded over 24 hours in RW care - 1271
Number of temperature events recorded over 24 hours in CW care - 1417
The mean (SD) gestation age in the CW group was 30.7 (1.16) weeks and in the RW group was 30.7 (1.02) weeks. The intervention and control arms were similar in terms of gestation age, birth weight, day of enrollment and KMC time.

Primary Outcome
The proportion of out of range temperature events (hypothermia / hyperthermia) were comparable in RW (4.64%) versus CW (5.15%); RR = 1.1(0.79 - 1.55) with a p value of 0.6.
When analyzed independently, the hypothermia events were similar in CW versus RW and hyperthermia events were also similar in CW versus RW(CW 2.89% vs RW 2.2%, p value 0.31)(CW 2.25% vs RW 2.43 %, p value 0.85)
Subgroup analysis showed no difference in hypothermia events and hyperthermia events at 0,1,2 and 4 hours of enrollment in CW versus RW group.

Secondary outcomes
Apnea was recorded in 14.3 % of babies in CW group as compared to 20.3% of babies in RW group. Tachycardia was noted in 7.9 % of babies in CW group as compared to 3.4 % of babies in RW group. 3.2% of babies had feed intolerance in CW group as compared to 10.1% of babies in RW group. Each of these outcomes was statistically not different. The combined incidence of physiological events (apnea / desaturations, tachycardia or bradycardia and feed intolerance) was less in CW than RW and it was nearing statistical significance with RR of 0.49 (0.25-0.97) and p value of 0.06.
Adverse events- Babies were monitored for extremes of temperature changes (<36 or >38 0C) in either RW or CW device. No such records were observed during the study. Gel leakage or skin burns were not found in the CW group.

Conclusion
1. Isothermal mattress (Cocoon warmer, CW) was comparable to radiant warmer (RW) in thermoregulation of hospitalized stable preterm babies.
2. Physiological instability events observed over one week (apnea, feed intolerance and tachycardia); were comparable when stable preterm babies were nursed in CW or RW.
3. There was no difference in the weight gain (over one week), among babies nursed in CW versus RW

References
Clinical profile of patients diagnosed with Expiratory Central Airway Collapse in a tertiary care centre

Dr. Arjun S  
Dr. Ameer KA  
Dr. Arjun P  
Dr. Joshi M  
Dr. Kesavan Nair  
Dr. Vinod Kumar Kesavan  

Background
Expiratory Central Airway Collapse (ECAC) is a syndrome comprising of 2 different pathophysiological entities – Tracheobronchomalacia (TBM) and Excessive Dynamic Airway Collapse (EDAC). Weakness of cartilage is seen in TBM whereas laxity of posterior tracheal membrane is seen in EDAC. Bronchoscopy is the gold standard in diagnosis but dynamic CT Chest is equally sensitive for diagnosis.

The aim of the study was to assess the clinical profile of patients diagnosed as ECAC in a tertiary care centre.

Method
A retrospective, descriptive study was carried out in 14 patients who were diagnosed as ECAC during the period 2015-2017. A detailed clinical history was taken. Dynamic CT Chest, Bronchoscopy and Spirometry were also reviewed.

Results
8 patients (57%) had TBM and 6(43%) had EDAC. Mean age of presentation of TBM was 61.75 and EDAC was 69.33. 8 (57%) were females and 6(43%) were males. 13(93%) had cough as the predominant symptom. 10(71.42%) had a diagnosis of asthma with spirometry showing mild obstruction with good reversibility. 3 patients (21.42%) were treated as cough variant asthma but ultimately proven to be ECAC and 1 was treated as LPRD later found to have ECAC. 10(71.42%) had Diabetes and Hypertension as comorbid illness. 11(78.57%) were non smoker and 3(21.42%) were reformed smokers. 11(79%) were diagnosed as ECAC with Dynamic CT chest and 3(21%) were diagnosed via bronchoscopy. All patients had symptomatic improvement with CPAP.

Conclusion
ECAC is more common in females and usually presents after 60 yrs of age. Uncontrolled, brassy cough was the predominant presenting symptom. Dynamic CT Chest helps in diagnosis of TBM but not EDAC. ECAC should be considered as a possible cause while evaluating patients with uncontrolled asthma especially those with uncontrolled cough. CPAP therapy significantly helps in achieving symptom relief in patients with ECAC.

Abbreviations
CT-Computerised Tomography  
LPRD- Laryngo Pharyngeal Reflux Disease  
CPAP- Continuous Positive Airway Pressure.
Abstract

Objective: To assess the receptive and expressive language outcome of Very Low Birth Weight babies at 2yrs corrected age, using REELS (Receptive Expressive Emergent Language Scale) and compare it against normal birth weight ‘at risk’ babies on developmental follow up.

Materials and methods: Cross sectional study conducted at Child development Centre, Thiruvananthapuram and NICU of SAT Hospital, a tertiary care hospital. 75 VLBW babies and 26 normal birth weight babies with corrected age 2yrs were selected at random and language outcome was measured using REELS.

Results: The mean receptive language quotient among VLBW babies was 91.37+-8.35 and that of NBW babies was 97.19+-7.07. The difference between the means was statistically significant (p=0.002). The mean expressive language in VLBW babies was 82.64+-12.32 and that among NBW babies was 92.77+-10.47. The difference between the means was statistically significant (p<0.001). There is a delay in expressive language quotient which is 20% in VLBW and 4% in NBW babies and the difference is statistically significant (p=0.019).

Conclusion

The mean receptive and expressive language quotient of very low birth weight infants is significantly less than that of their normal weight counterparts. The difference is more significant in the expressive language compared to the receptive language.

Introduction

Advances in perinatal care in the last two decades has led to the improved survival of the very low birth weight (VLBW) babies. It is known that VLBW infants are at higher risk for poor neurodevelopmental outcome compared to normal birth weight babies.1

In addition to the major neurodevelopmental sequelae like cerebral palsy, severe vision and hearing impairment etc, these babies have higher risk for impairments in language, cognition and behaviour.2,3

In particular, research has indicated deficits in expressive language, receptive language, word retrieval and comprehension, word production, short-term auditory memory, and speech articulation. As many as 22% to 28% of premature, low birth weight children present with language deficits within the first few years of life, which is significantly higher than the general population.4

Language delay may be earliest indicator of other developmental disorders like ASD, ADHD, specific learning disability, intellectual disability.
etc., which in turn, are more common in VLBW children.5,6

Because the difference in language abilities in VLBW children may be part of a global deficit that impairs many areas of cognitive functioning, it is more likely to be significant.7 Also as language is the foundation for all social interactions, children with language delay can have social difficulties and behavioural problems.

There are no similar studies from India which evaluates the language outcome of very low birth weight infants.

**Objective**

To assess the receptive and expressive language outcome of Very Low Birth Weight babies at 2yrs corrected age, using REELS (Receptive Expressive Emergent Language Scale) and compare it against normal birth weight ‘at risk’ babies on developmental follow up.

**Materials and methods**

**Study design**

Descriptive study – Cross sectional study

**Study setting**

Child development Centre, Thiruvananthapuram and NICU of SAT Hospital, a tertiary care hospital.

**Study sample**

75 consecutive VLBW babies on follow up at CDC, who attained corrected age of 2yrs during the study period were included in the study. These children had received early intervention services from our centre. For comparison, a sample of 26 randomly selected normal birth weight babies with corrected age 2yrs during the same period were also taken.

**Exclusion criteria**

Babies with major congenital anomalies, chromosomal disorders, hearing and vision impairment were not included in 2yr outcome assessment.

**Study period**

A period of 6 months from December 2016 to May 2017

**Data collection**

Data was collected after getting ethical clearance from Institutional Ethics Committee. Receptive and expressive language quotients were calculated using REELS, which was administered by the investigator.

**Data analysis**

Quantitative data like language quotient was analysed as means. Significance of difference in mean between two samples was analysed using Student t-test and significance of difference in proportion calculated using chi square test using SPSS software.

**Ethical concerns and cost involved : Nil**

**Results**

Comparison of Mean Receptive Language Quotient of VLBW babies and Normal Birth weight babies

<table>
<thead>
<tr>
<th>Type of Babies</th>
<th>No.</th>
<th>Mean RLQ</th>
<th>Std. Deviation</th>
<th>95% CI of the difference</th>
<th>*P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Birth Weight</td>
<td>26</td>
<td>97.19</td>
<td>7.07</td>
<td>2.19-9.46</td>
<td>0.002</td>
</tr>
<tr>
<td>VLBW</td>
<td>75</td>
<td>91.37</td>
<td>8.35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean receptive language quotient among VLBW babies was 91.37+$\pm$8.35 and that of NBW babies was 97.19+$\pm$7.07. The difference between the means was statistically significant (p=0.002).

Comparison of Mean Expressive Language Development of VLBW babies and Normal Birth weight babies.
<table>
<thead>
<tr>
<th>Type of Babies</th>
<th>No.</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>95% CI of the difference</th>
<th>*P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBW</td>
<td>26</td>
<td>92.77</td>
<td>10.47</td>
<td>4.76-15.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>VLBW</td>
<td>75</td>
<td>82.64</td>
<td>12.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean expressive language in VLBW babies was 82.64 ± 12.32 and that among NBW babies was 92.77 ± 10.47. The difference between the means was statistically significant (p<0.001).

Comparison of delay in expressive language development:

<table>
<thead>
<tr>
<th>Expressive language quotient</th>
<th>VLBW N(%)</th>
<th>Normal birth weight</th>
<th>x²</th>
<th>df</th>
<th>*p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (&gt;= 70%)</td>
<td>60(80%)</td>
<td>25(96%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay(&lt; 70%)</td>
<td>15(20%)</td>
<td>1(4%)</td>
<td>5.015</td>
<td>1</td>
<td>0.019</td>
</tr>
<tr>
<td>TOTAL</td>
<td>75</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparison of delay in expressive language development:

There is a delay in expressive language quotient which is 20% in VLBW and 4% in NBW babies and the difference is statistically significant (p=0.019)

Conclusion:

The mean receptive and expressive language quotient of very low birth weight infants is significantly less than that of their normal weight counterparts. The difference is more significant in the expressive language compared to the receptive language. There is a significant difference in the percentage of delay in expressive language between VLBW and normal birth weight babies. Hence there is a significant role of consistent developmental surveillance to pick up early language delays in these children and give appropriate early intervention to improve these deficits and not follow a ‘wait and watch’ policy.

References:


Address for Correspondence
Dr. Reeba Ann Daniel
Developmental Pediatrics
Contact no: 9446090496
email: danielreeba@yahoo.co.in
Clinicoetiological profile and outcome of urticaria in children aged 1 month to 15 years in a tertiary care center- A descriptive study

Dr. Ebin Roshan Paul
Dr. Prameela Joji
Dr. Asha Zacharia

Department of Paediatrics
Department of Dermatology

Abstract: Mean age of our study population was 5.6 +/- 3.3 years. Of that more than ¾ of the population had acute urticaria 75%(n=108) others had chronic urticaria 5.6%(n=8), acute on chronic urticaria 9.7%(n=14), acute on recurrent urticaria 9.7%(n=14). Etiological profile showed idiopathic (27.8%) followed by equal numbers were triggered by infection (22.9%) and food (22.9%). Mean duration of illness was 66.0 hours (2.75 days). There was a statistically significant positive correlation between UAS score and duration of illness (p value <0.05) and correlation coefficient ($r^2$) was (0.569).

Keywords: Urticaria, clinical profile, etiology, UAS, prognosis, children.

Introduction

Urticaria is a common condition in paediatric age group with highest impact on quality of life. Despite the ease of diagnosis etiology of urticaria is often difficult to establish even after extensive investigations and follow up. Urticaria Activity Score (UAS) which is a well established Likert-type symptom intensity scale (0 to 3) measures the disease severity and monitor treatment results. We used UAS score at time of presentation for assessing the severity and monitoring response.

Objective

To determine the Clinicoetiological profile of urticaria in children and its outcome based on duration of illness and UAS scoring.

Methodology

We conducted a descriptive study of urticaria in 144 children aged 1 month to 15 years at KIMS Hospital, Trivandrum from April 2015 to March 2017.

Children who presented with clinical features of urticaria were enrolled in to our study. Clinicoetiological profile was determined based on history and relevant investigations. We scored the severity of urticaria based on UAS (Urticaria Activity Score) system at time of presentation and final outcome was noted in terms of duration of illness in hours.

Statistical methods

The statistical data was analysed using the software SPSS version 16. All the numerical data were expressed as mean ± standard deviation. Correlation between duration of illness and UAS score were analyzed with spearman correlation. A p-value <0.05 was considered as significance.

Observations and results

Total children enrolled in the study -144
Total children analysed – 144

A. Baseline characteristics of the study population
Table 4. Baseline characteristics of the study population

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2</td>
<td>17</td>
<td>11.8</td>
</tr>
<tr>
<td>2-4</td>
<td>54</td>
<td>37.5</td>
</tr>
<tr>
<td>4-6</td>
<td>22</td>
<td>15.2</td>
</tr>
<tr>
<td>6-10</td>
<td>34</td>
<td>23.6</td>
</tr>
<tr>
<td>10-12</td>
<td>14</td>
<td>9.7</td>
</tr>
<tr>
<td>12-15</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>80</td>
<td>55.6</td>
</tr>
<tr>
<td>Females</td>
<td>64</td>
<td>44.4</td>
</tr>
<tr>
<td>Rural / Urban</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>125</td>
<td>86.8</td>
</tr>
<tr>
<td>Rural</td>
<td>19</td>
<td>13.19</td>
</tr>
<tr>
<td>Type of urticaria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>108</td>
<td>75.0</td>
</tr>
<tr>
<td>Chronic</td>
<td>8</td>
<td>5.6</td>
</tr>
<tr>
<td>Acute on chronic</td>
<td>14</td>
<td>9.7</td>
</tr>
<tr>
<td>Acute on recurrent</td>
<td>14</td>
<td>9.7</td>
</tr>
<tr>
<td>First episode of urticaria</td>
<td>110</td>
<td>76</td>
</tr>
<tr>
<td>Family history of urticaria</td>
<td>33</td>
<td>22.9</td>
</tr>
</tbody>
</table>

In our study population males and females were almost equally distributed. Most of the study population belonged to urban population (86.8%) than rural population (13.19%). Majority of the children had a positive family history of allergy and urticaria in the family. Around 110 patients (76%) came with first episode of urticaria. Age distribution showed increased incidence of urticaria between 2 to 4 years of age.

B. Main results

1. Primary outcome

Table 5: Clinical profile of urticaria in children

<table>
<thead>
<tr>
<th>Type of urticarial lesion</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>108</td>
<td>75</td>
</tr>
<tr>
<td>Chronic</td>
<td>8</td>
<td>5.6</td>
</tr>
<tr>
<td>Acute on chronic</td>
<td>14</td>
<td>9.7</td>
</tr>
<tr>
<td>Acute on recurrent</td>
<td>14</td>
<td>9.7</td>
</tr>
</tbody>
</table>

Acute urticaria was having increase in incidence (75%) followed by chronic (5.6%) and recurrent urticaria (9.7%).

Infection (22.9%) and food allergy (22.9 %) were the most common etiological agent identified in the study population. Followed by drug allergy (11.8%). Incidence of idiopathic urticaria was 27.8%. 4 patients had dental carries as etiology (2.8%). Insect bite induced urticaria occurred in 10 patients (6.9%).
2. Secondary Outcome

Table 6: duration of illness and UAS score

<table>
<thead>
<tr>
<th>UAS score</th>
<th>Mean duration of illness in hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23.33</td>
</tr>
<tr>
<td>2</td>
<td>34.18</td>
</tr>
<tr>
<td>3</td>
<td>73.14</td>
</tr>
<tr>
<td>4</td>
<td>79.23</td>
</tr>
<tr>
<td>5</td>
<td>126.17</td>
</tr>
<tr>
<td>6</td>
<td>110.5</td>
</tr>
</tbody>
</table>

Mean duration of urticaria was highest with UAS score 5.

Table 7: Correlation between duration of illness and UAS scoring

<table>
<thead>
<tr>
<th>Correlation coefficient (r^2)</th>
<th>UAS score</th>
<th>duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>0.569</td>
<td></td>
</tr>
<tr>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

Duration of illness and UAS score was found to be statistically significant with p value <0.001 and correlation coefficient 0.569.

Fig 3: Correlation curve between UAS score and duration of illness

3. Other relevant findings

Table 8: Duration of illness

<table>
<thead>
<tr>
<th>Duration of illness</th>
<th>Median</th>
<th>Inter Quartile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>66.5 hours</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

Mean duration of illness was 66.5 hours in the study population.

Table 9: Symptoms of urticaria

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Number</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Fever</td>
<td>70</td>
<td>48.6</td>
</tr>
<tr>
<td>b) Itching</td>
<td>123</td>
<td>85.4</td>
</tr>
<tr>
<td>c) Angioedema</td>
<td>23</td>
<td>16.0</td>
</tr>
<tr>
<td>d) Hypotension</td>
<td>4</td>
<td>2.8</td>
</tr>
<tr>
<td>e) Vomiting</td>
<td>27</td>
<td>18.8</td>
</tr>
<tr>
<td>f) Wheezing</td>
<td>22</td>
<td>15.3</td>
</tr>
<tr>
<td>g) Rhinitis</td>
<td>17</td>
<td>11.8</td>
</tr>
<tr>
<td>h) Abdomen pain/diarrhoea</td>
<td>38</td>
<td>26.4</td>
</tr>
<tr>
<td>i) Joint pain</td>
<td>10</td>
<td>6.9</td>
</tr>
<tr>
<td>j) Dermatographism</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>k) Internal diseases</td>
<td>1</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Almost half of the children with urticaria presented with fever and about 85 % of children had associated itching. Angioedema was noted in 16 % of the study group. Dermatographism was noted in 2 patients (1.4%).

Table 10: Comorbidities in study population

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atopy</td>
<td>38</td>
<td>26.4</td>
</tr>
<tr>
<td>Allergic Rhinitis</td>
<td>40</td>
<td>27.8</td>
</tr>
<tr>
<td>Asthma</td>
<td>42</td>
<td>29.2</td>
</tr>
<tr>
<td>Food allergy</td>
<td>29</td>
<td>20.1</td>
</tr>
<tr>
<td>Drug allergy</td>
<td>14</td>
<td>9.7</td>
</tr>
</tbody>
</table>

Associated Asthma was the most common comorbidity seen among the study population (29.2 %). Followed by allergic rhinitis (27.8 %), atopy (26.4% ) and food allergy(20.1%).

Institutional Research Studies
Table 11: Family history of associated comorbidities

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atopy</td>
<td>41</td>
<td>28.5%</td>
</tr>
<tr>
<td>Allergic rhinitis</td>
<td>55</td>
<td>38.2%</td>
</tr>
<tr>
<td>Asthma</td>
<td>45</td>
<td>31.3%</td>
</tr>
<tr>
<td>Urticaria</td>
<td>33</td>
<td>22.9%</td>
</tr>
</tbody>
</table>

Most common comorbidity in family was Allergic rhinitis (38.2%) followed by Asthma (31.3%) and Atopy (28.5%) and 22.9% of the family members had urticaria.

Table 12: Atopy association and duration of illness

<table>
<thead>
<tr>
<th>Atopy</th>
<th>Number</th>
<th>Mean duration in hours</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>106</td>
<td>65.18</td>
<td>52.876</td>
</tr>
<tr>
<td>yes</td>
<td>38</td>
<td>76.50</td>
<td>61.876</td>
</tr>
</tbody>
</table>

Those children who had associated atopy in personal comorbity, the mean duration of urticaria was found to be more and statistically significant with p value <0.001.

Discussion

Urticaria is a very troublesome disease in all age group. Although the literature on the disease is vast, only few studies are still available on urticaria, especially on the clinical profile and prognosis of the illness. So we took up this descriptive study based on history, clinical examination and relevant investigation to assess the Clinicoetiological profile and prognosis in children aged 1 month to 15 years. During the study period of 2 years, a total of 144 children were enrolled.

Primary outcome

1. Clinicoetiological profile of urticaria

The clinical profile of urticaria was evaluated in our study population. Despite of very limited studies available in India; we found that all forms of urticaria can be observed during the childhood. Of the 144 children evaluated presented with acute urticaria 75%, chronic urticaria 5.6%, acute on chronic urticaria 9.7%, acute on recurrent urticaria 9.7%. That is around 75% of the cases presented as acute urticaria in to our clinics followed by 24.9% of chronic and recurrent cases. This is in par with the studies conducted by Mortureux et al in 1992 where acute urticaria was 70% and 30 % of chronic and recurrent cases. As we did the study in a tertiary care center which acts as a referral hospital, some severe cases referred from peripheral center were included in the study so that the frequency of chronic and recurrent urticaria is more. This will not represent the actual prevalence in general population.

In our study with the support of clinical and relevant lab investigation a cause was identified in 104 cases (60 %). An association between the etiological agent and urticaria is often very difficult to establish since there is no possibility of challenging the patient with the suspected etiological agent. Success of identifying a cause or etiological agent goes in par with study conducted by Yan-Ren et al in 2011 Taiwan of 72.2 %. Etiological profile of urticaria showed infection (22.9%) and food (22.9%) as most common etiological agents. This is in comparison with studies conducted by Yan-
Ren et al\textsuperscript{22} where food allergy (24\%) and infection (45\%) accounted for the main etiology. In the study conducted by Mortureux et al\textsuperscript{21} the most common etiological agents identified were also infection (81\%) and food allergy (11\%). Sackesen et al\textsuperscript{6} in his study concluded infection (49\% acute, 39\% chronic), food (3\% acute, 12\% chronic) and drugs (5\% acute, 17\% chronic) as the important causes of urticaria. Infection mainly included viral infection proven by blood counts and CRP. In food allergy induced urticaria cases sea food was the commonly implicated ones, especially shrimp, shell fish. Beef allergy was also noted in 8 cases. One case of chronic urticaria after testing with food allergy panel came positive for coconut allergy, excluded from the diet and followed up in OPD. A positive drug intake attributed to 17 patients, especially antibiotics. Out of 17 cases 3 cases were associated with mefenamic acid, 1 case with acetaminophen, 3 cases with vancomycin and 2 cases were due to ceftriazone allergy. Insect bite induced urticaria accounted for 10 (6.9\%), this is slightly increased compared to the reference study Yan-Ren et al\textsuperscript{22} (1.5\%) most probably due to the geographical variation of the comparison groups and types of the insects. Dental carries were identified with 4 cases (2.8\%), dental consultation and follow up was done on op basis. Incidence of dental carries was more than the reference study may due to the better socioeconomic standard present at the reference population and improved general hygiene. Those cases in which an identifiable cause not detected even after a proper history, clinical examination and lab investigations were classified as idiopathic urticaria. In our study etiological factors are not documented in 40 patients (27.8\%), includes 25 acute urticaria, 12 chronic urticaria, and 3 cases of recurrent urticaria. This was in agreement with the study conducted by Sackesen et al\textsuperscript{6} in 2002 where idiopathic cases were 46\% (20 cases of acute and 8 cases of chronic urticaria). In our study we were able to identify an etiology in 76.8\% (83 cases) of acute and 45.5\% (10 cases) of chronic urticaria which was in par with Sackesen et al\textsuperscript{6} where success rate was 56\% in acute and 53\% in chronic cases.

**Secondary Outcome**

1. Prognosis of Urticaria based on duration of illness and UAS score.

In our study duration of illness was taken as the time period from the first appearance of the symptoms till resolution. This was measured in hours and compared with the initial UAS scoring at the time of presentation\textsuperscript{17}. The mean duration of the illness was 66.0 hours (2.75 days) and the duration of illness in hours was plotted against UAS score and correlation curve obtained. There was a significant positive correlation with statistical significance (p value <0.001) and correlation coefficient (r\textsuperscript{2}) (0.569). However, we found out that those children who had urticaria with high UAS score at presentation i.e, UAS score 6 had a shorter duration of illness than the rest of the group. This result might be due to the difference in methods used to treat those cases with increased severity.

**Other relevant findings**

1. Associated symptoms of children presented with urticaria in our study were evaluated and fever was associated with 70 cases (48.6\%), followed by itching (85\%), angioedema (16\%), vomiting (18.8\%), wheezing (15.3\%), rhinitis (11.8\%), abdomen symptoms (26.4\%) and joint pain (6.9\%). This is almost similar in study done by Kozel et al\textsuperscript{20} and Yan-Ren et al\textsuperscript{22} in their studies in 1998. In their study asthma (15\%), allergic rhinitis
(17%), atopic dermatitis (5%) were documented with the clinical presentation. In study conducted by Montreuax et al� in 1992 the association of atopy with family members was 58%, particularly atopic dermatitis which is similar with our study, they also noted itching (89%), fever (50%), rhinitis in 30 cases. These findings are similar with our study. Fever was seen in 70 cases but was not always due to the underlying infection. This may be due to a part of generalised inflammatory response associated with urticaria than denoting underlying infection.

2. Association of comorbidities.

Our study evaluated various personal allergies associated with urticaria. Asthma was the most common one, accounting for 29%, followed by allergic rhinitis (27.8%) and atopy (26.4%), this is in par with study conducted by Sackesen et al⁶ showed atopy 29% and Yan-Ren et al²² allergic rhinitis 23.8% in their study population. Family history of allergy showed allergic rhinitis (38.2%) as the most common comorbidity followed by asthma (31.3%) and atopy (28.5%). Sackesen et al⁶ study showed family allergy association as 25% but didn’t classified in to subgroups. In Montreuax et al²¹ study association of atopy in personal or family members was 58% which is much higher than our results.

3. Association of Atopy and duration of illness in urticaria.

Mean duration of the illness was 66.5 hours in our study population. Then the duration of illness in children with a positive history of atopy (personal or family history) was compared with the rest of the study population, it showed a significant increase in duration of illness. The mean duration in atopy associated cases was 76.5 hours, whereas as it was 65.18 hours in the rest of population. This was significantly high with P value <0.01. This is in comparison with study done by Yan-Ren et al²² which showed longer duration of urticaria associated with positive atopic history.

Another important result seen in our study was the absence of urinary tract infection as etiology. A number of investigators have found that antibiotics used for urinary tract infection caused the development of urticaria, the infection itself not being a factor in the development of the disease as such.²⁷, ²⁸ our result can be compared with the above mentioned findings.

<table>
<thead>
<tr>
<th>Studies</th>
<th>Study period</th>
<th>Sample size</th>
<th>Sample population</th>
<th>Clinical profile</th>
<th>Etiology</th>
<th>Correlation of duration of illness and UAS score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our study</td>
<td>2015-17</td>
<td>144</td>
<td>Children (1 month-15 years)</td>
<td>Acute (75%)</td>
<td>Infection (22.9%)</td>
<td>Positive correlation (P&lt;0.001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Chronic (5.6%)</td>
<td>Food (22.9%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute on chronic</td>
<td>Idiopathic (27.8%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(9.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute on recurrent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(9.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sackesen et al</td>
<td>2001</td>
<td>44</td>
<td>Children (1-19 years)</td>
<td>Acute (68%)</td>
<td>Infection (49%)</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Chronic (31%)</td>
<td>Drugs (5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Recurrent (24%)</td>
<td>Food (3%)</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion
Acute urticaria was the commonest presentation in our study population. Even though the etiology remained idiopathic in majority of cases infection and food were identified as the significant triggers. There was statistically significant positive correlation between duration of illness and UAS scoring. Initial UAS score at presentation can be used to predict the duration of illness and severity.

References


Address for correspondence
Dr Ebin Roshan Paul
Department of Paediatrics
email: ebinroshan@gmail.com
contact no: 7558857571
Normal saline vs heparin saline infusion for catheter patency in neonates

Dr. Rajesh K N
Dr. Jyothi Prabhakar
Dr. Femitha P
Dr. Naveen Jain

Benzyl alcohol containing heparin flushes / infusion are used in most Indian NICUs. Preservative free (no benzyl alcohol) heparin solution is not easily available. There is a warning from AAP on use of benzyl alcohol containing solutions in neonates (especially preterm babies) since 1983; it is associated with respiratory depression, encephalopathy, metabolic acidosis and gasping syndrome, leading to death.(1)

Heparin saline (HS) is theoretically superior to normal saline (NS) for maintaining the patency of central venous catheters. A Cochrane review published in 2008 supports use of heparin saline in maintaining patency of central catheter in neonates. (2) An evidence based practice changed study in neonates (2011) demonstrated that normal saline alone is as effective in maintaining catheter patency. (3) In adults, recent meta-analysis (2017) shows that HS is not superior to NS in reducing CVCs occlusion. (Ten RCTs involving 7875 subjects). (4) Due to the safety warning on use of benzyl alcohol containing heparin, non-availability of heparin free of benzyl alcohol and possible benefits of normal saline alone, we replaced heparin saline with normal saline to maintain patency of central catheters for last 6 months, and observed that, the patency of central catheters and life seem to be same with use of NS infusions (no heparin at all).

Aim

Comparison of heparin saline vs saline in maintaining line patency days in neonates with central catheters

Type of study : Analytic study

Period of study : Retrospective data: 01/04/2016 to 31/03/2017,
Prospective data: 01/05/2017 to 31/08/2017.

Setting : Level III B Neonatal ICU

Methods

A retrospective audit (while heparin saline was in use) of catheter life, complications like blocks, bleeding, infection were obtained from EMR. Data was collected prospectively after the change of heparin saline to normal saline on the same parameters.

Results

Retrospective audit (HS) was completed on 47 neonates. Prospective data was collected on 32 neonates (NS). The babies were comparable in the two periods HS: NS – gestation 31.9 (3.3) vs 31.1 (4.8); birth weigh 1542 (738) vs 1493 (780).

The duration of central line was similar median 5 days (IQR 3- 6.75) vs 4 (IQR 2- 7) in HS vs NS groups.
<table>
<thead>
<tr>
<th></th>
<th>Heparin saline N= 48</th>
<th>Normal saline N = 32</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of PICC line **</td>
<td>5 (3-6.75)</td>
<td>4 (2-7)</td>
<td>NS</td>
</tr>
<tr>
<td>Erythema at site of insertion</td>
<td>4.2</td>
<td>6.2</td>
<td>NS</td>
</tr>
<tr>
<td>Extravasation</td>
<td>8.5</td>
<td>9.7</td>
<td>NS</td>
</tr>
<tr>
<td>Block</td>
<td>12.5</td>
<td>12.5</td>
<td>NS</td>
</tr>
<tr>
<td>Infection</td>
<td>10.4</td>
<td>12.5</td>
<td>NS</td>
</tr>
</tbody>
</table>

**Conclusion**

Normal saline infusion is equally effective in maintaining central catheter patency as is heparin saline infusion. Benzyl alcohol containing heparin must be strictly avoided in neonates.

**References**


Metabolic syndrome among overweight and obese children -
A descriptive study

Dr. Sam P Mathew
Dr. Ebin Roshan Paul
Dr. Sheeja M
Dr. Asok Kumar G

Introduction
Metabolic Syndrome (MetS) comprises of central obesity, dyslipidemia, impaired glucose metabolism and systemic hypertension. Pediatric MetS is a predictor of MetS, cardiovascular disease and diabetes in adulthood.

Aims and Objectives
To determine the proportion of MetS in overweight and obese children based on International Diabetic Federation (IDF) 2007 diagnostic criteria and to study its individual components.

Materials and Methods
We conducted a descriptive study in 85 obese and overweight children aged 10 to 16 years at the Pediatric Obesity clinic, KIMS hospital, Thiruvananthapuram from July 2016 to June 2017. Overweight and obese children were identified using Indian Academy of Pediatrics (IAP) Body Mass Index (BMI) for age chart 2015. We defined MetS using the consensus definition by IDF(2007). MetS was diagnosed in children with waist circumference ≥90th percentile and two of the following four criteria- Triglycerides (TG) ≥150 mg/dL, High Density Lipoprotein Cholesterol (HDLC) <40 mg/dL, Blood Pressure (BP) ≥130/85 mm of Hg and Fasting Blood Sugar (FBS) ≥100 mg/dL.

Data was analysed using the statistical software SPSS version 16. All the numerical data was expressed as mean ± standard deviation and categorical data as percentages. The data was analysed using Chi square test. A p-value ≤ 0.05 was considered as statistically significant.

Results
Mean age of study population was 12.28 ± 1.5 yrs. More than three-fourth of the study population were obese (n=67;78.8%). The overall proportion of MetS among the study population was 24.7% (n=21). More than one-fourth of the obese children had MetS (n=19;28.4%) while only 2 overweight children had MetS. Diagnostic criteria satisfied by children with MetS (n=21) were low HDL-C (n=17;81%), high FBS (n=14;66.7%), high TG (n=13;61.9%) and high BP (n=2;9.5%). Of eighty five obese and overweight children, increased WC (n=80;94.1%) was the commonest criteria, followed by low HDL-C (n=34;40%), high FBS (n=18;21.2%), high TG (n=18;21.2%) and high BP (n=5;5.90%). Association of low HDL-C, high FBS and high TG in obese and overweight children with MetS was statistically significant (p<0.001).

Conclusion
Metabolic syndrome is a significant comorbidity among obese and overweight children. High FBS was significantly higher in our study compared to previous studies.
Process of developing audio-visual information for invasive procedures in NICU – Opportunities and challenges

Dr. Fairy S V
Dr. Jyoti Prabhakar
Dr. Femitha P
Dr. Naveen Jain

Background
Audiovisual patient information is known to be an effective way of informing patients about procedures and treatment; knowledge scores and patient satisfaction are better. (1,2) Families of sick babies seek more information about the procedures and possible risks involved. (2) Busy clinical services offered by different members of the team result in inconsistent information. We feel that verbal information or written information sheets have limitations (3) and are not enough to explain the needs of an invasive procedure and do not prepare families for potential complications. This results in severe disruption in doctor – patient relationships. We present our experience of developing audio-visual information for invasive procedures in sick neonates.

Settings: Level III B NICU, Kerala, India
Period of study: 4 months (June 1st to September 30th 2017)
Population: Families of sick neonates

Methods
Audio-visual aid (video played on laptop from YouTube) was used to explain the need for an invasive procedure (central catheter), details of the procedure and expected risks. Written patient information sheet (PIS) on central catheter was given to family before obtaining consent (Appendix 1). One to one interaction by principle investigator followed, to address family concerns. Procedure was completed after consent was obtained. Questionnaire was presented to the family, to evaluate effectiveness of information transfer (Appendix 2).

Important areas of knowledge transfer evaluated were:
1. Need for procedure
2. Risks involved – Pain, bleeding, infection, failed insertion, blocks and leaks resulting in early removal and difficulty in removing
3. Duration of retaining the catheters
4. Expense of the catheters
5. Technical difficulty in insertion.

Results
Families were informed regarding central catheter insertion (n=32) using the mentioned sequence of audio visual, written PIS and personal interaction before central catheter (umbilical venous, umbilical arterial and PICC) insertion was planned. It took an average of 10-15 minutes to complete the process. None of the families were uncomfortable about the audio-visual process of communication or felt disturbed about seeing the procedure video.
Gestation and birth weight of babies undergoing
central catheter insertion was median 29 (IQR 27, 33.5) weeks and 1037 (IQR 810, 1482) grams. Complication rates noted was highest for infections (24%) followed by block (12.5%), edema due to extravasation (9%), systemic complications (7.5%), erythema (5%), malposition (2.5%), leak (2.5%) and bleeding at insertion site (2.5%). All parents answered the questionnaire provided. Important areas of information – need for central catheter, potential risks including possible failed procedure, duration of catheter and costs involved were 100 % correctly understood by parents. The survey demonstrated effective transfer of information in all cases.

Half of the families expressed that English was not their language of choice.

Discussion
Our study demonstrates the obvious. There is a need to inform families in detail about invasive procedures on their sick baby. Families are presented with information that is simple and clear. Families accepted that they had accessed information from internet and may have been confused. It is possible that our survey was answered as “all good”, possible because parents were scared to question the principle investigator a member of the clinical services.

Way forward
Indian videos need to be evolved in patient preferred languages.

References

Appendix-1

1. Umbilical vein cannulation
Umbilical vein cannulation involves inserting a tube (catheter) through the body’s largest vein (umbilical vein) to give fluid and medicines in special situations.

It is common to perform this procedure in emergency situations, example in labor room, for a reliable and urgent access to deliver lifesaving medicines into blood, when a baby does not breath (cry) at birth.

Umbilical vein catheter is critical to provide high concentration fluids, nutrition and medicines; these may be damaging if delivered into smaller veins.

We also insert an umbilical vein catheter for a procedure called exchange transfusion, done to control severe jaundice.

2. Peripherally Inserted Central Catheter (PICC)
PICC is a small catheter inserted through a small vein visible underneath the skin in the baby’s upper or lower limbs (peripheries) to reach a large vein (central veins). PICC are inserted when the baby requires lifesaving intravenous medications to be delivered consistently (example - dopamine, dobutamine) when the baby’s blood circulation is poor (shock).
Central catheter is inserted only when it is critical for your baby’s health.
This procedure is not associated with pain most often; we will take all appropriate measures to reduce your baby’s discomfort.
There is a risk of some blood loss, most often less than a few drops which will not cause any harm to the baby; rarely more blood may be lost, we will take all precautions to minimize this.
There is a risk of the baby getting infections, despite the precautions we take. We monitor the babies while the catheter is in, and even after it is removed, for any signs of infections and antibiotics will be provided in necessary.
We may retain the catheter for a week; but it may be removed earlier if the baby improves and the catheter is not required, if the line is not functioning properly or if there is an early signal of infection.
There is a rare chance of occurrence of some unusual complications. The catheter can cause injury to the heart, this is an unusual complication. Occasionally, there may be difficulty in removing the catheter. The catheter may get blocked or blood clots may decrease supply of blood to organs of the body. Though uncommon, we will take measures to prevent these serious adverse events, and will be vigilant to diagnose them early.
The umbilical vein catheter is an expensive device and it requires experience and skill to insert successfully and safely. Please note that in some situations we may not succeed in the procedure either due to technical difficulties or due to differences in the baby’s veins; We still may have purchased and used the catheter for your baby; the catheter cannot be re-used.
Appendix-2
Questionnaire:
We are going to insert a central catheter (long line). You were explained by Dr. Fairy by the video, leaflet and discussion. Kindly circle YES/NO to the following questions. We wish to evaluate whether we could transfer information completely and accurately to you.
1. Have you understood that the line is critical for your baby?
2. Have you understood that the line is expensive?
3. Have you understood that the procedure requires high technical skill?
Did you understand that………
4. We MAY NOT SUCCEED in some cases either due to technical difficulties or due to differences in the baby’s veins and we still may have purchased and used the line for your baby.
5. Since this procedure is a minor surgery, the baby may have pain although we take measures to reduce it.
6. There may be some blood loss, most often less than a few drops.
7. There is a risk of infection requiring antibiotics related to the procedure even though we take maximum precautions to reduce this risk (gloves, antiseptics).
8. We plan to keep this line for more than 1 week. We may remove it earlier
   - If the baby improves fast
   - If there is an early signal of infection
   - If the line is not functioning well
9. Are you aware of some unusual complications which may be encountered:
   - Injury to the heart (Pericardial tamponade, rhythm abnormalities). We take precautions to ensure that the line does not hurt the heart (XRAY, USG).
   - Difficulty in removing the line.
   - Block in the line and the clot causing problem to other organs of the body.
10. Has all your doubts and queries regarding the procedure clarified now?
Role of bronchial provocation test in evaluation of chronic cough with normal chest x-ray

Dr. Preethi V  
Dr. Ameer K A  
Dr. Kesavan Nair  
Dr. Arjun P  
Dr. Vinod Kumar Kesavan  
Dr. Joshi

Department of Respiratory Medicine

Introduction
Cough variant asthma constitutes major cause for chronic cough with normal chest x-ray. Other causes encountered are reflex, non-asthmatic eosinophilic bronchitis, upper airway chronic syndrome. Bronchial provocation test is gold standard for confirmation of cough variant asthma where clinical signs and PFT can be normal.

Study
A retrospective analysis of patients who had undergone bronchial provocation test with methacholine dated from June 2016 to April 2017 is done. All these patients had initial evaluation with chest x-ray and PFT which were normal. A total of 45 patients had undergone bronchial provocation test and 34 were found to be positive and they were considered as cough variant asthma and put on appropriate medical management and improved on follow up. 10 were found to be negative out of which 6 responded to anti-reflux treatment, 2 were suspected to have non-asthmatic eosinophilic bronchitis without any other causes and responded to short course of steroids and 2 were upper airway cough syndrome.

Conclusion
Bronchial provocation is a useful clinical tool for accurate diagnosis of cough variant asthma in cases of chronic cough with normal chest x-ray and PFT for planning appropriate long term management. Majority of the patients with chronic cough had cough variant asthma as proved by our study.
Programmes from November 2017 to January 2018

1. Clinicopathological Meeting 1 Nov 2017
2. RCPE on Cardiology 1 Nov 2017
3. AHA BLS & ACLS courses 7, 8 & 9 Nov 2017
4. CME on Transforming Dyslipidemia Management: Emerging Prospective 9 Nov 2017
5. Research Methodology session on Type of Study 14 Nov 2017
6. Clinical club meeting 15 Nov 2017
7. CME on Infection Prevention and Global Best Practices 21 Nov 2017
8. External Cardiology Clinical Club meeting 21 Nov 2017
9. CME on Review of antplatelets in STEMI patients 24 Nov 2017
10. AHA PALS course 24 & 26 Nov 2017
11. A web symposium of RCPE 30 Nov 2017
12. Webinar on “Developing and Implementing Antibiotic Policy” in a Hospital 5 Dec 2017
13. Clinical Pathological Meeting 6 Dec 2017
15. AHA BLS& ACLS Courses at KIMS Alshifa 14,15 & 16 Dec 2017
16. Webinar on Asthma management and importance of achieving control 15 Dec 2017
17. Clinical Club Meeting 20 Dec 2017
18. Webinar on “Surgical Management of PPH – predict, prepare and Handle & Management of Cervical Incompetence” 20 Dec 2017
19. AHA BLS & ACLS Courses 28, 29 & 30 Dec 2017
21. Clinical Club Meeting 17 Jan 2018
22. CME programme on Know your Antibiotics 21 Jan 2018
23. CME on “Rheumatology- Obstetrics Interface” 27 Jan 2018
24. AHA BLS course 31 Jan 2018

Forthcoming programmes
1. AHA BLS & ACLS Courses 1, 2 & 3 Mar 2018
2. AHA PALS Course 23 & 24 Mar 2018
3. AHA BLS & ACLS Courses 5, 6 & 7 Apr 2018

Publications from November 2017 to January 2018

<table>
<thead>
<tr>
<th>Name of the Journal</th>
<th>Title of the paper</th>
<th>Authors</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Journal Cardiology Practice, European Society of Cardiology</td>
<td>Pericardial involvement in neoplastic disease: Prevalence, clinical picture, diagnosis and treatment</td>
<td>Prof. G. Vijayaraghavan</td>
<td>Department of Cardiology</td>
</tr>
<tr>
<td>Indian Chest Society</td>
<td>Incidentally detected lung lesions in a patient with Crohn’s disease</td>
<td>Dr.P. Arjun, Dr. Azharul Haque, Dr. Rahul Ramachandran</td>
<td>Department of Respiratory Medicine</td>
</tr>
<tr>
<td>Indian Journal of Transplantation</td>
<td>Anaesthetic Management for Liver Transplantation in small children</td>
<td>Dr. N. Bhadrinath, Dr. Kusuma R Halemani</td>
<td>Department of Anaesthesiology</td>
</tr>
<tr>
<td>Indian Journal of Transplantation</td>
<td>Renal Transplantation in a patient with Alportsyndrome and cardiac dysfunction: Role of Levosimendan</td>
<td>Dr. Sanu Sajan, Dr. Kusuma R Halemani</td>
<td>Department of Anaesthesiology</td>
</tr>
</tbody>
</table>

Data courtesy: Mr. Manoj M T
Ayurveda

- Treatment for Arthritis & Rheumatic diseases
- Osteo Arthritis Knee
- Osteoporosis
- Spine-related disorders
- Multiple Sclerosis
- Psoriasis treatment
- Sports Injuries
- Respiratory Allergic diseases
- Degenerative disorders
- Musculo-Skeletal disorders
- Slimming programme
- Rejuvenation programme

Health Care Programmes
- Rejuvenation Therapy

- Body Purification Therapy
- Fem 40 care (For females Nearing or after Menopause)
- Relaxation programme
- Beauty Care programme
- Body Immunity programme
- Slimming programme
- Healthy Spine Care
- Age-related diseases
- Sports fitness programme
- Special package for IT professionals (Solution for WRULD & Stress)
- Post natal maternal care
- Preventive eye care for children
- Stress Management Therapy
Accreditations

• ACHSI (Australian Council on Healthcare Standards International)
  KIMS got ACHSI accreditation in the year 2006 for demonstrating continuous improvements in patient safety and delivery of quality healthcare that is at par with international standards.
• NABH (National Accreditation Board for Hospitals & Healthcare Providers - India)
  KIMS received NABH in the year 2006 as a recognition of its commitment to ensure safe healthcare practices and infection control measures.
• NASL (National Accreditation Board for Testing & Calibration Laboratories)
  The Laboratory at KIMS is accredited by NASL in the year 2008, for ensuring precise diagnosis and following safe practices.
• NABH (National Accreditation Board for Hospitals & Healthcare Providers - India)
  KIMS Blood Bank is accredited by NABH in the year 2011, as recognition of its commitment to make safe blood and blood products easily available at the hour of need by adhering to modern techniques and quality standards.
• KIMS is certified with nursing excellence by NABH in the year 2015, as a recognition of its commitment towards safe and ethical nursing care.

Recognitions

• Best Hospital IT Project Award 2017.
• Australian Council on Healthcare Standards International Medal for outstanding contribution at an international level to improving quality and safety in health service.
• NIB Awards 2016 for House Journal - Best Content.
• Golden Peacock National Quality Award 2014 in Healthcare Sector.
• Best Service Provider Award 2014 from Star Health and Allied Insurance Company Ltd.
• Golden Peacock International Business Excellence Award for the year 2013 initiated by Institute of Directors, United Kingdom.
• Commendation Certificate of Kerala State Government for energy conservation for the year 2012.
• TRIM CSR award 2012, for excellence in CSR Activities undertaken for the financial years 2010-2011 and 2011-2012.
• Dr Pratap C Reddy Safe Care award for Best Medication Safety Initiative 2011.
• Avaya Global Connect Customer responsiveness Award 2010.
• South Asian Federation of Accountants (SAFA) award for best presented accounts and corporate governance disclosure.
• A – stable rating by CRISIL for best financial reporting in the year 2008.
• Hospital Management Asia (HMA) Award for the Project Musculo skeletal injuries in 2009.
• AV Gandhi Memorial Award 2007 and 2008 for excellence in Cardiology.
• Award for transparency in financial reporting in the year 2005 and 2008.
• Best Power User Award by Cyber India Online for optimal power utilisation in the healthcare industry in India in 2004.
• Kerala State Pollution Control Board Award for biomedical waste management in 2004 & 2006.
• Health Tourism Award 2005 for maximum foreign exchange earnings.
• Best Customer Site Award from HCL Infosystems Ltd.
• Regional ACLS Training Center by American Heart Association.

Asia’s leading tertiary care hospital
SURGICAL EXCELLENCE, WITH UNPARALLELED COMPETENCY

KIMS Centre for General & Minimally Invasive Surgery is South Kerala’s Largest General Surgery unit with experienced surgeons available 24x7 providing a wide range of procedures both elective & emergency.

OUR SERVICES
- All Abdominal, Elective & Emergency Surgeries
- Management of Diabetic foot Infections
- Gall Bladder & Appendix - Keyhole Surgery
- Hydrocele & Hernia Surgery- Open & Laparoscopic
- Painless surgery for Piles, Fistula & Fissures
- Surgical procedures for Breast lumps & Cancer
- Salivary Gland Surgery
- Thyroid & Parathyroid Surgery
- Varicose Vein - Minimally Invasive, Laser & Radio Frequency
- Weight Reduction Surgery - Bariatric

OUR EXPERTS
Prof. Dr. Vijayan K N  
Coordinator & Professor Emeritus
Dr. Shafy Ali Khan S L, Consultant
Dr. Firoz Khan M H, Consultant
Dr. Liju Varghese, Consultant
Dr. Mittu John Mathew, Consultant
Dr. Najeeb A A, Consultant
Dr. Sandeep. B. Pillai, Consultant
Dr. P.P. Nair, Sr. Consultant
Dr. R. Padmakumar, Consultant
Dr. Maya Devi T J, Hon. Consultant

When you need expert surgical care, Trust us

For more details & appointments: 0471 3041000

KIMS TRIVANDRUM