Paper Id: PNSP012
Title: Survival pattern in paediatric posterior fossa tumours

Dr. Ratnadip Bose*

Co-authors - Dr. Karanjit Singh Narang, Dr. Ajaya Nand Jha

Abstract: Aim of study: To observe the survival pattern in patients of different posterior fossa tumours in paediatric age group at the Neurosurgical department of a tertiary care centre. Materials and methods: From January, 2010 till December, 2016 retrospective data was collected for all paediatric patients (age below 18 years) who were treated at our Neurosurgery department for posterior fossa tumours and whose follow up data was available. Patients’ clinical history and surgical data were reviewed. They were followed up during OPD visits and/or via telephonic conversation. Post-operative survival duration was calculated from the date of surgery till the date of expiry or the date of last contact with the patient. Results: Total 32 patients were included in this study, out of which 22 were male and 10 female. The age of the patients ranged from 1 to 17 years (mean 8.9 years). There were 11 patients of medulloblastoma, 11 pilocytic astrocytoma, 3 anaplastic ependymoma, 4 ATRT, 1 brain stem glioma, 1 diffuse astrocytoma and 1 mature cystic teratoma. The mean survival of patients of medulloblastoma was 30.6 months (range 2.4 – 70.1 months), pilocytic astrocytoma 25.5 months (range 6.3 – 69.8 months), anaplastic ependymoma 31.3 months (range 8.6 – 53.9 months), ATRT 2.7 months (range 1.5 – 4.4 months). 1 patient of brain stem glioma had post-operative survival of 13.1 months, 1 patient of diffuse astrocytoma 7.9 months and 1 patient of mature cystic teratoma 27.5 months. Conclusion: Tumour histology plays a crucial role in determining post-operative survival. Key words: Paediatric, posterior fossa tumour, post-operative survival

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Paper Id: PNSP015
Title: Experience of pediatric head injury in rural hospital

Dr. Shailendra Anjankar*

Co-authors - Nitin Madavi, Sandeep Iratwar, Akshay Patil, Hemant Deshpande

Abstract: Experience of pediatric head injury in rural hospital Introduction: Head injuries are a major cause of pediatric hospital emergency room visits and frequently require extensive treatment. Moreover, in rural area where there are poor quality of roads and low educational status of population, it is a matter of great concern. Aim: To analyze & share the experience of pediatric head injury in rural hospital in last 5 years. Materials and Methods: A hospital based prospective, observational study was carried out in 124 patients of the age group 0-15 years admitted to the neurosurgery department in pediatric wards of a tertiary care hospital, with a history of trauma during the period from last five years from Jan 2012 to Dec 2016. Information regarding demographic profile, radiological and clinical details were recorded and analyzed. Results: Out of the 3059 patients of head injury admitted 4.05% (127) were under age of 15 years. Maximum
head injuries were found in 1-5 year of age group (54.5%). Road traffic accident was the most common cause of injury observed in 70 % patients. Concussion was the most common type of injury found in 66.67 % patients. Conclusion: Patients with motor vehicle-related head trauma need special consideration regardless of injury severity. To bring the mortality rate down, children, especially with rural background should be made aware about the importance of strict compliance to traffic rules and regulations. One of the best ways to do it is to include road safety issues in school curriculum. Key words: Head Trauma, Pediatric Head Injury, Rural India.

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Paper Id: PNSP016
Title: Stereotactic Biopsy Useful Stool For Paediatric Brainstem Tumor

**Dr. BAGATHSINGH KARUPPANAN**

*Co-authors - Dr.K.Selvamuthukumaran, Dr.K.Senthilkumar, Dr.R.Ganesh, Dr.Anil*

**Abstract:** INTRODUCTION: The appreciation that brainstem tumours do not comprise a homogeneous pathological group and that up to 20% of the preoperative radiological diagnoses of brainstem lesions prove at operation to be wrong, has established the need for a firm histological diagnosis prior to treatment. MRI has been shown to have a limited accuracy in establishing a diagnosis with false rates of up to 30% and moreover, tumor gradation was false in more than 50% of cases when compared to results of histopathological examination. Appropriate therapy of brainstem lesions is guided by accurate diagnosis. Because the majority of brainstem lesions are not amenable to surgical resection, stereotactic biopsy is an attractive method of obtaining pathological tissue. Here we had couple of brainstem lesions with various clinical presentations & radiological findings. Many of our patients are children, we donot want to subject to Palliative Chemo-Radiation directly. In brain tumors not amenable to surgical resection, stereotactic biopsy is the procedure of choice to establish a diagnosis and in light of available studies demonstrating similar rates of periprocedural risks, this applies to both: Supratentorial tumors and lesions located in the brainstem. Materials & Methods & Results: We had 10 patients in which 6 were paediatric patients, 4 were adults. They were presented with various clinical findings from Unconscious to Cranial Nerve palsies, dense neurological deficit. All the patients were subjected to MRI with contrast. The biopsy was performed in a procedure room under local anaesthesia for adults, while children required sedation & GA. All procedures are CT Guided CapeTown system, we got tissue for HPE at OT in all patents except the cyst. The decision to use either a precoronal or transcerebellar entry point has to be tailored patient-specific and appropriate experience is therefore most important, of the total, 7 patients approached Trans-Frontal Route, 3 were through Trans-Cerebellar route. We got histopathological results in 9 patients. Six of them were astrocytoma, 1 as Tuberculosis, 1 PNET, 1 Cysticfluid. One patient the pathology was inconclusive. The location of the target, the choice of entry, the radiological characteristic of the lesion, enhancement pattern, and age group did not significantly correlate with the occurrence of inconclusive biopsy. 9 Patients were discharged well from hospital. One patient detoriated after the procedure. Discussion & Conclusion: Brainstem gliomas constitute 10% of brain tumors in children and less than 2% in adults. Stereotactic Procedure is well known modality for
Brain stem lesions. This procedure has a lot of advantage over Open Microsurgical technique. Success rate of procedure is well documented. Over risks and complications, Couple of Approaches are available here, we followed Trans cerebellar As well as Trans frontal route to get into the lesions. These interventions are useful to the further course. The data suggest that, in adult patients, brainstem lesions are of varied pathology and stereotactic biopsy can provide adequate tissue for diagnosis. The data also suggest that the diagnosis of brainstem glioma in children can often be made without submitting the patient to the risk of surgery. Of managing the patients. Diagnostic success rates have shown to be positively correlated with the number of biopsy procedures performed each year in a center. All study results which demonstrated low procedure-related morbidity and high diagnostic yield were reported by experienced centers. Intra-axial brainstem lesions with a radiological pattern of glioma represent a very heterogeneous tumour group with completely different outcomes. Radiological features alone are not reliable for diagnostic classification. Stereotactic biopsy is a safe method to obtain a valid tissue diagnosis, which is indispensable for treatment decision. The data indicate that brain-stem gliomas are not a homogeneous group of tumors as far as their clinical, CT, and pathological features are concerned. These features may be useful in assessing prognosis and in developing future treatment protocols. The study by Manoj et al., is no exception with, then it is a very safe procedure with a high diagnostic yield and should be considered the ’golden standard’ for the establishment of a diagnosis in patients with brainstem lesions. Type the title here Type the text here

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**Paper Id:** PNSP017

**Title:** Management strategy of pediatric colloid cysts

*Dr. Prabu Raj*

**Co-authors** - Dhaval Shukla

**Abstract:** Colloid cysts are uncommon lesions in pediatric age group, which most commonly occur in the fourth through fifth decade. The authors hereby report a series of colloid cysts in the pediatric age group. Material and method: A retrospective study was conducted on all patients of colloid cyst underwent surgery in our institute over a period of January 2002 to August 2016 (15 years). Patients above the age of 18 year were excluded from the study. They were analyzed on Clinical presentation, radiological findings, surgical approaches and outcome. Results: Total 36 patients with age range 8 to 18 years. The male-to-female ratio was 3.5:1. Headache and vomiting are most common symptom and Papilledema most common clinical sign. Pre-operative CT showed a hyperdense non-enhancing lesion in the majority of cases. In 36 patients, endoscopic removal was attempted in 14, In one patient colloid cyst could not be removed endoscopically and converted into transcortical transventricular approach. In 5 patients underwent transcortical transventricular excision, while transcallosal approach was performed in 17 patients. 7 patients out of which 2 patients underwent endoscopic, 4 in transcallosal and 1 in transcortical are partial excision of cyst. Post operatively 5 patients developed CSF leak, all are managed conservatively. 1 patient had operative site extradural hematoma underwent re-exploration. A mean follow-up period was 11.6 months in available 26 patients. The majority of patients are asymptomatic. Conclusion: Colloid cysts in the young are thought to be more aggressive clinically and radiologically and therefore, early surgical intervention is indicated.

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Paper Id: PNSP018
Title: SUBDURAL COLLECTIONS COMPLICATING THIRD VENTRICULOLOSTOMY

Dr. Manikandan Patchayappan*

Co-authors - DR. RAJESH . A, PROF. DR. SYAMALA . S

Abstract: SUBDURAL COLLECTIONS COMPLICATING THIRD VENTRICULOLOSTOMY AIM & OBJECTIVE : To report a case of bilateral subdural collections complicating endoscopic third ventriculostomy (ETV) MATERIALS & METHODS : Case report : A 4 month old child was brought to the hospital with complaints of progressive increase in size of the head and downward looking of the eyes for past 2 months and decreased activity and vomiting for one day. One month back, the child was admitted in a private hospital for similar complaints and was diagnosed to have right frontotemporoparietal porencephalic cyst with moderate hydrocephalus. Cystoventriculostomy- endoscopic third ventriculostomy- aqueductoplasty was done, following which the child developed bilateral frontotemporoparital subdural hygroma and was referred to our hospital. After evaluating the child right subduroperitoneal shunt was done. The child improved symptomatically DISCUSSION : Infants are not appropriate candidates for ETV as they have poorly developed absorptive surfaces in the subarachnoid spaces and have an open anterior fontanelle with soft skull. Open AF and soft skull prevents the pressure dependent pulsatile drainage of CSF through arachnoid granulations into sagittal sinus. Reasons for subdural hygroma after ETV are 1. Overdrainage of CSF 2. The presumed pathophysiology is that CSF forces its way through the frontal tract and into the subdural space because the newly created normal pathways and the absorptive mechanisms need time to mature. So CSF naturally tries to escape through the pathway of least resistance. 3. traumatic rupture of arachnoid due to sudden decompression of ventricles serves as a valve between the high pressure subarachnoid space and low pressure subdural space. 4. non functioning ventriculostomy can result in chronic subdural CSF collections. 5. abrupt drainage of CSF during ETV may create a large space between the dura and brain enabling the development of subdural or epidural collections 6. The CSF absorption rate does not increase as rapidly as the increase in the CSF volume in the subarachnoid space following the ETV CONCLUSION : ETV should be avoided in infants till the anterior fontanelle closes and ETV should be cautiously done in patients with thin cerebral cortical mantle and with nonprogressive dilated ventricles.
Paper Id: PNSP019

Title: BARBITURATE COMA, HYPERTONIC SALINE, AND EXTERNAL VENTRICULAR DRAINAGE A COMBINED APPROACHES IPEDIATRIC TRAUMATIC BRAIN INJURY PATIENTS WITH REFRACTORY RAISED INTRACRANIAL PRESSURE.

Dr. Atmaranjan Dash*

Co-authors - Atmaranjan dash

Abstract: Introduction Head injury is the most devastating component of childhood trauma and the leading cause of death in the injured children in paediatric age group. Control of intracranial pressure (ICP) is of paramount importance in-patients with traumatic brain injury, and multiple therapies are used to achieve ICP control. Nonsurgical therapy includes the use of osmotic and loop diuretics, hypothermia, sedation and paralysis, controlled hyperventilation, and barbiturate coma. Hypertonic saline also tried for reduction of icp with good results. we here observed the role of thiopentone coma in combination with hyertonic saline and external ventricular drainage (evd) in pediatric TBA patients with refractory icp Materials and methods: Here we describe 2 cases where refractory intra cranial hypertension followed by traumatic brain injury was managed by a combined modality of treatment which includes hypertonic saline, one patient was a 6 month old infant and the other patient was 8 yrs old child. Codman icp monitors used in the both patients for icp monitoring. External ventricular drainage (evd) tried along with hypertonic saline for control of icp f/b thiopentone coma with bi spectral index monitoring to control the refractory icp. Continuous icp monitoring and and target cerebral perfusion pressure (cpp) of 60 mmhg was maintained for both the patients. both recovered well without any squeal and discharged home without any complication. the patients were regularly followed up on outpatient basis. Conclusion: This combined approach is quite effective in patients with pediatric TBA cases with close monitoring. This study can be carried out in large number of patient to see the actual results.

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Paper Id: PNSP022

Title: Predictors of surgical outcome of traumatic peripheral nerve injuries in children- an institutional experience.

Dr. SUBHAS KONAR*

Co-authors - B.Indira Devi, Dhananjaya. I.Bhat, Dhaval Shukla

Abstract: AIM: This study was undertaken to address the epidemiological characteristics, operative details and surgical outcome of peripheral nerve injuries in children treated in tertiary hospital in India (NIMHANS,Bangalore). MATERIALS AND METHODS: This is a retrospective study of epidemiology, operative findings, and surgical outcome over a period of 2000-2016. Our series includes 102 children with peripheral nerve injuries of various causes. RESULT: Intramuscular injections were the most common cause (52.9%) followed by entrapment (15.6%). Most common nerve involved was sciatic (54.9 %) followed by common peroneal nerve (13.7%), ulnar (10.8%), radial (10.8%). Perineural adhesion was the commonest intraoperative finding (74.5 %) followed by neuroma in continuity (14.7%) and gap (10.8%).Most of the children with peripheral adhesion underwent external and internal neurolysis (75.5%). Follow-up was available for 67 children. The median follow up period was 7 months (ranged between 3-36 months). The outcome was assessed according to MRC grading. 76.1% children had favorable functional improvement. Age less than 10 years (p=0. 06), injury before 6 months (p=0. 03) and MRC motor grade (<3) (p=0. 01) was positive predictive factors related to the final outcome. CONCLUSION: Early surgical intervention, age less than 10 years, incomplete motor palsy were the best predictors for superior functional outcome. This study can serve as a guide to determine the epidemiology, duration of intervention and surgical outcome of traumatic peripheral nerve injuries in the pediatric population.
Paper Id: PNSP023

Title: A CASE OF ISOLATED CALVARIAL MELORHEOSTOSIS : A RARE BONY TUMOR INVOLVING CALVARIUM.

Dr. DINESH GANGAPATNAM*

Co-authors – KIRAN, VARSHESH, SUCHANDA

Abstract: Melorheostosis also called as Lery’s disease is a rare benign disease of mesenchymal dysplastic origin. It presents most frequently as peripheral hyperostosis with a characteristic dripping candle wax appearance on plain radiographs. The disease usually affects the appendicular skeleton and is seen rarely in the cranium. There have been fewer than 10 reported cases of craniofacial involvement. Here we present a case of 17year old male patient presented with hard bony swelling in the frontal and parietal regions. The diagnosis was made based on radiographic & CT features - flowing candle wax appearance. Surgical excision of the lesion done, intraoperatively it was a bony growth which involved frontal and high parietal bone. Histopathological findings are consistent with Melorheostosis. CONCLUSION : Isolated calvarial melorheostosis is a very rare presentation, but it should be considered as a differential diagnosis in case of sclerosing bony dysplasias. Conventional radiography is sufficient to make the diagnosis. CT with 3Dreconstruction effectively reveals involvement of cortex and the medullary cavity, and clear demarcation of normal from abnormal bone which aids in surgical planning. MRI is helpful for imaging soft tissue involvement. Radionuclide bone scan can determine other sites of skeletal involvement by demonstrating abnormal uptake of radiopharmaceutical tracer. Treatment includes excision of the lesion. Recurrence rates have not been reported.

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Title: A RARE CASE OF INTRASPINAL GANGLIONEUROBLASTOMA

Dr. K. ASHOK KUMAR RAJU*

Co-authors – Dr. SUCHANDA BHATTACHARJEE, Dr. K.MURALI KRISHNA

Abstract: Abstract – Neuroblastic tumors can be classified as neuroblastoma, ganglioneuroblastoma (GNB), or ganglioneuroma. Ganglioneuroblastomas consist of small, round, immature neuroblast cells and matured ganglion cells. They are most commonly found in the mediastinum and retro peritoneum; intraspinal GNBs are extremely rare. There are only 6 cases of intraspinal GNB reported in the English literature. A 4 year old child underwent resection of an intramedullary tumor at D11-D12 level in 2015. Pathological diagnosis was GNB. After surgery, his symptoms resolved and he recovered to normal condition. He again presented to the hospital with bladder incontinence since 2 months. Magnetic resonance imaging suggested recurrence of spinal tumor. He underwent subtotal resection of the tumor and was sent for radiotherapy. Histopathology shows glial cells arranged in fibrillary background along with clusters of immature ganglion cells with GFAP-Positive, Synaptophysin-Positive, NF- Positive. Conclusion - GNB are extremely rare tumors which however needs to be considered in this particular age group.
Paper Id: PNSP030
Title: Pediatric Glioblastoma – Clinical profile, molecular alterations and their prognostic implications.

*Dr. ALOK UPPAR*

Co-authors – Dr. ARIVAZHAGAN.A, Dr. VANI SANTOSH

Abstract: Pediatric glioblastoma (pGBM) tumors, established as an entity, have been known to differ from their adult counterparts in terms of biology, genetics and ultimately survival of patients. AIM : 1)To identify the spectrum of pathological & genetic alterations encountered in pGBM and to correlate with clinico radiological features and prognosis. 2)To study the expression of various molecular markers in pediatric GBM and evaluate their prognostic significance. MATERIALS AND METHODS : In order to assess the clinicoradiological statistics in pediatric GBM and prognostic significance of a few novel molecular markers, we retrospectively analyzed 29 pGBMs (age range 3 to 18 years) occurring at different anatomical sites in the brain, operated at our institute between 2009 and 2014. Appropriate statistical tests were employed for various sets of data analysed. RESULTS :The median overall survival (OS) was 6.00 ± 0.882 months. The mean overall survival was 7.571 ± 1.118 months which was lower than most studies. Preoperative KPS, extent of surgical resection and adjuvant radiotherapy were found to be the clinical factors strongly influencing median survival and results showed statistical significance.(p<0.05). Loss of ATRX expression was found in a high percentage of lobar tumors(84%), while P53 staining was maximum in thalamic tumors. H3K27M mutant protein expression was noted in 8 out of 9 thalamic tumors and 5 out of 7 tumors in brainstem-cerebellar peduncular region. Patients with H3K27M mutation had the worst prognosis with mean OS of 5 months ±0.832 months, as against patients who did not have H3K27M mutation, which was 10.143±1.866 months(p=0.006). Other markers like P53, ATRX, and IDH1 did not influence the prognosis in this patient cohort. ATRX loss of expression was associated with a better OS, with a trend to significance, and such an association has not been reported earlier. CONCLUSIONS : This study is one of the first of its kind in the Indian population describing the clinicoradiological parameters, and evaluating the novel histone molecular alterations in pGBM and their prognostic significance. In the present study, we were able to identify a set of potential prognostic biomarkers that may be of use for targeted therapy in future and also for stratification of pGBM cases into clinically relevant subsets.

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Title: Ten Years Review of Management of Pineal Region Masses in Paediatric Patients: Things We Have Learned

Dr. Arunnath Kalapuraikkal*

Co-authors – Dr Shweta Kedia

Abstract: OBJECTIVE: Pineal region masses’ surgery has always been challenging requiring specialized surgical and stereotactic techniques. The paediatric age group is even more intriguing because of the varied histopathological presentations. The purpose of this review was to analyse a decade’s experience of managing pineal region masses in children. MATERIAL-METHODS: Ambispective analysis of forty six patients aged 18 years and below, treated between 2007-2016 was conducted. Clinico-radiological assessment and their management reviewed using the hospital data base. RESULTS: The age ranged from zero to 18 years with a mean of 10.8 years. Two thirds of the patients were male. Surgery was performed in all of the patients in the form of definite tumor excision, endoscopic third ventriculostomy with biopsy and shunt surgery. Three patients of glioma were subjected to secondary gamma knife therapy as well. Tissue diagnosis was varied, most common being the pineoblastomas. CSF tumor markers were helpful in forming a probable diagnosis and further planning the management strategy. Miscellaneous group formed a significant number of patients. CONCLUSIONS: Improvised tissue handling micro surgically along with protocolised preoperative workup and postoperative intensive care have made room for aggressive surgical resection as a definite form of therapy followed by adjuvant therapy when needed. Keywords: paediatric brain tumours, pineal lesions, germinomas, pineoblastomas, Krausse approach.

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Title: DORSAL CERVICAL THIRD HAND – A RARE CASE REPORT OF POLYMELIA

Dr. MANIKANDAN PATCHAYAPPAN*


Abstract: DORSAL CERVICAL THIRD HAND – A RARE CASE REPORT OF POLYMELIA AIM & OBJECTIVE : To report a rare case of polymelia – dorsal cervical third hand METHODS : Case report : A one month old male child was brought with a swelling in the nape of the neck with a hand like structure hanging down since birth. The anamoly was detected in the eighth month of intrauterine life and the child was delivered full term LSCS and cried immediately after birth. The child was born out of non consanguinous marriage and the mother took iron and folic acid supplements in the first three months of pregnancy. A firm swelling of size 8*6 cms was present in the nape of the neck with upper extent upto the posterior hair line and lower extent upto cervicodorsal junction and to 3 cms on either side of the midline. A 12 cm length rudimentary hand like projection hanging down from the swelling with 2 fingers (thumb and index finger). Bony structures were felt within the projection and the child had no neurological deficit. MRI CERVICAL SPINE revealed spina bifida at C3-C4 level with extrusion of soft tissues, subcutaneous fat, meningeal coverings and nerve roots and 2 bony finger like projection with phalanges noted in its posterior aspect, the entire extrusion is covered by skin and the arterial supply to the lesion is from muscular branches of costo cervical trunk of right subclavian artery. The swelling was excised in toto DISCUSSION : Polymelia also known as hydra syndrome is a birth defect involving limbs (a type of dysmelia), in which the affected individual has more than the usual number of limbs i.e. having five or more limbs. The extra limb is most commonly shrunken or deformed. Surgical resection of the accessory limb at an early age is recommended in patients with supernumerary extremities CONCLUSION : In our present case, the infant had a favourable outcome and evolution subsequent to surgical treatment of his supernumerary limb, with no sequelae or disability whatsoever to date.
Paper Id: PNSP035

Title: Results of cyst decompression, Ommaya reservoir placement and radiation therapy for cystic craniopharyngiomas

Dr. Ranjith K Moorthy*

Co-authors – Vedantam Rajshekhar

Abstract: Aims & Objectives: To evaluate the outcomes following cyst decompression or aspiration after placement of an Ommaya reservoir (OR) for primary and recurrent cystic craniopharyngiomas followed by radiation therapy in patients less than 18 years. Materials & Methods: A retrospective review of inpatient and outpatient medical records and radiological images of patients who underwent cyst decompression with OR placement followed by radiation therapy (RT) for primary or recurrent cystic craniopharyngiomas between 1995 and 2010 was performed. Results: 16 of 24 patients who underwent this management paradigm were available for follow up. There were 9 males and 7 females, their median age at the time of undergoing OR placement being 11.5 years (IQR – 9 to 14 years). The median follow up was 68.5 months (range, 15 to 252 months; IQR – 30 to 121 months). 5 patients underwent stereotactic placement of OR as primary procedure, 4 patients underwent open cyst decompression and placement of OR while stereotactic placement of OR was done as for recurrence in 7 patients. Two patients underwent multiple aspirations through the OR for symptomatic cyst recollection, one during the fourth week and another 7 months following OR placement. Of the 13 patients with available outcomes on vision, 7 patients maintained their vision (normal in 4 patients preoperatively) while 5 patients had improvement in vision at follow up. One patient had deterioration in vision secondary to radiation induced optic neuropathy. 14 of the 15 patients with radiological follow up had no cyst recurrence and had a stable residue that was predominantly calcified. One patient required reoperation for symptomatic cyst distant from site of initial cyst 101 months after initial procedure. Conclusions: At a median follow up of nearly 7 years, a conservative approach of cyst decompression with OR placement followed by radiation therapy yields good visual outcomes and tumour control in children with primary cystic craniopharyngiomas and recurrent cysts following surgery.
Paper Id: PNSP037

Title: Factors associated with early postoperative shunt requirement in children with posterior fossa tumours

Dr. Ananth Abraham*

Co-authors – Ranjith Moorthy, Lakshmanan Jayaseelan, Vedantam Rajshekar

Abstract: Aims and objectives: To analyse the incidence of and factors associated with requirement of early permanent CSF diversion following posterior fossa tumour resection in children. Materials and methods: In this retrospective study, data from 160 children (age <18 years) who underwent primary resection of their posterior fossa tumours without preoperative permanent CSF diversion procedures were collected. The incidence of requirement for a permanent CSF diversion procedure within 30 days after tumour resection was studied and association with various demographic, tumour related and surgery related risk factors was analysed. Results: At presentation, 154 (96%) of the 160 patients had symptomatic hydrocephalus. There were 105 males and 55 females, their mean age at presentation being 8.8 years (range 0.5 to 17 years). Postoperatively, 14 (8.8%) patients required shunt placement. The indications for shunt surgery were persistent symptoms of raised intracranial pressure (n=5, 36%), CSF leak from the wound (n= 8, 57%) and tense pseudomeningocele (n=1, 7%) On multivariate analysis, age < 6 years (OR 43.7, 95% CI 4.3 – 444.8, p=0.001), subtotal or partial resection of tumour (OR 18.9, 95% CI 2.5 – 144, p=0.005) and postoperative meningitis (OR 15.1, 95% CI 2.3 – 97.9, p=0.004) were independent risk factors for the requirement of shunt surgery. Conclusions: Routine preoperative shunts are not necessary in children with posterior fossa tumours. Our early postoperative shunt insertion rate of around 9% is low compared with the approximately 30% rate of shunt requirement reported in literature in this group of patients. Keywords: Posterior fossa tumour, hydrocephalus, children, shunt.
Title: PIGMENTED NEUROECTODERMAL TUMOR OF INFANCY - MELANOTIC PROGONOMA

Dr. Abhirama Chandra Gabbita*

Co-authors – Dr. VIVEK.V, Prof. K.GANESH

Abstract: Title: PIGMENTED NEUROECTODERMAL TUMOR OF INFANCY - MELANOTIC PROGONOMA. Aim & Objective – To report the surgical experience in the management of a rare case of cranial form of Melanotic Neuroectodermal tumor in an infant. Keywords- Pigmented neuroectodermal tumor of infancy, Melanotic progonoma, Superior sagittal Sinus. Material and Methods- A 5 month old male child presented with insidious onset, gradually growing midline frontal bony swelling of 6 weeks duration. No history of Birth trauma, seizures or vomiting. Child was alert, moving all four limbs well. A 2.5cms diameter hard bony swelling was noted in the midline anterior to anterior fontanelle. Skin over the swelling was normal. Anterior fontanelle was lax. Imaging- MRI brain plain and contrast showed a well defined extra axial lesion in the right frontal parasaggital region. Cerebral venogram showed invasion of superior sagittal sinus by the tumor. Surgical treatment- Right frontal craniotomy extending across midline and subtotal excision of tumor was done. Precoronal mid frontal bone was thinned out and elevated as hump. Tumor has transgressed the dura and hence to present itself under the bone. Tumor was black in color, not vascular, hard to soft in consistency, Tumor was arising from precoronal falx extending more towards right side and totally occluded superior sagittal sinus, just infract of coronal suture. Tumor was excised by dividing the falx around the tumor. Superior saagittal sinus was ligated at the level of coronal suture and 4cms infront of this ligature.tumor was excised with the involved superior sagittal sinus and falx. A small bit of tumor involving sagittal sinus just behind the coronal suture was left back as it was densely adherent to large draining veins on both sides. Dura was closed with pericranial graft. Morselized bone pieces from parietal bone was placed over the bone defect. Post operative period was uneventful. Child was active, no focal deficits, scalp wound healed well. Histopathology – showed pigmented neuroectodermal – Melanotic Progonoma Discussion: Melanotic Neuroectodermal tumor is a rare lesion that typically presents within the first year of life.Location is variable with most common being Maxilla(80%), Mandible (6%), Cranial (11%). Only 437 cases are reported till date of which only 43 cases are located in skull, of which 9 at anterior fontanellae,5 in orbit,1 at lambdoid suture, 14 in occipital bone, 9 in temporal bone and 4 in frontal bone and one case in which exact location was not known. Dural sinus involvement is rare, with less than 5 cases reported in literature. Gross total surgical resection is the treatment of choice. In our case a small bit of tumor which was adherent to large draining veins was left back deliberately. Recurrence after subtotal removal is 28.3%. Post operative radiotherapy was not contemplated as the patient was an infant. Patient was advised periodic follow up and then to consider chemotherapy. As patient was overseas patient, he was lost for follow up. This case is being presented for its Extreme rarity. As patient was overseas patient patient was lost for follow up. This case is being presented for its rarity.
Paper Id: PNSP039

Title: Orbital advancement in craniosynostosis: Methods and Outcome

SUBHAS KONAR*

Co-authors – Dr Dhaval Shukla

Abstract: Introduction: Orbital advancement is a skull base procedure commonly done in cranial remodeling surgery for craniosynostosis involving coronal and metopic sutures. Objective: This retrospective study was undertaken to address the cosmetic outcome after orbital advancement in craniosynostosis in children treated in tertiary hospital in India (NIMHANS, Bangalore) from 2009-2017. Methods: We have performed a retrospective analysis of prospectively collected data of cases of craniosynostosis where orbital advancement was needed and assessed the cosmetic outcome at recent follow-up. We assessed residual deformities, irregularities, complications, and the need for additional surgery, according to Sloan et, al classification. Results: A total 31 cases of orbital advancement were included in the present cohort. Twenty-six children were non-syndromic and 5 cases were syndromic. Among the non-syndromic, the commonest suture involved was unicoronal (12) followed by metopic (10) and 9 cases of a bicoronal suture. Median age was 12 months (range 4-36 months). Seventeen children were female and 14 were male. All children underwent bi-frontal craniotomy and orbital advancement. Three types of materials were used for fixation of orbital bandeau: thread (24), titanium mini plate (3) and bio absorbable mini plate (4). In cases where the reduction of height of orbit was planned the orbital bandeau was fixed anterior and inferior to frontozygomatic suture, otherwise as it was fixed in front of the level of frontozygomatic suture. Follow up available for 20 children and median of 14 months. Seven children had class 1 outcome, 8 children had class 2, 3 children had class 3 and 2 children had class 4 outcome. One child developed proptosis due to increased intracranial pressure, which was managed with external ventricular drainage. This child has planned for second surgery. Conclusion: The technique of orbital advancement needs customization based on the type of suture involved, amount of advancement required, and age of the child. The overall outcome is satisfactory.
Title: MANAGEMENT OF PANCRANIOSYNOSTOSIS

Mr. YERASI VARUN KUMAR REDDY*

Co-authors – DHAVAL P SHUKLA

Abstract: Management of pancraniosynostosis Yerasi Varun Kumar Reddy, Dhaval P Shukla, NIMHANS, Bengaluru Introduction Craniosynostosis is the premature fusion of cranial sutures leading to deformity of cranial vault as well as cranial base. Majority of the craniosynostoses are non syndromic and involve single suture. Multiple suture involvement can be identified as inherited syndromic or non syndromic craniosynostoses. Early recognition and timely management are key to prevent development of complications like vision loss in pancraniosynostosis. Study design: Retrospective review of pancraniosynostosis cases managed at NIMHANS. Methods: Three children with similar complaints of abnormal shape of head and features of raised intracranial pressure (headache, visual deterioration) were evaluated and diagnosed to have pancraniosynostosis. A brief description of nature of disease, complications, management and post surgery outcome has been given. Results: All children had nearly normocephalic synostosis. Two children underwent primary CSF diversion procedure (ventriculo-peritoneal shunt). Third child underwent expansile cranioplasty which could not be completed due to large emissary veins and subsequent ventriculo-peritoneal shunt was done. Neurological examination in the post operative period showed clinical improvement. Conclusions: Early recognition and prediction of complications with timely management will ensure to prevent complications due to raised intracranial pressure.

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Title: Diffuse spinal leptomeningeal spread of a pilocytic astrocytoma in a 13-year-old child

Dr. Saikiran Puram*

Co-authors – Dr. Suchanda Battacharjee, Dr.Kiran

Abstract: Diffuse spinal leptomeningeal spread of a pilocytic astrocytoma in a 13-year-old child Dr. Suchanda Battacharjee, Dr.Kiran, Dr.Ashwin, Dr.Saikiran Department of Neurosurgery, Nizam’s Institute of Medical Sciences Abstract: Pilocytic astrocytomas correspond to low grade gliomas and therefore metastasis is exceedingly rare. However, pilocytic astrocytomas are able to metastasize and leptomeningeal dissemination may be seen. What are the treatment options of these cases? We present a case report of a 13-year-old child with a pilocytic astrocytoma of the Right thalamus with leptomeningeal dissemination of the spinal meninges. Partial resection of the cerebral tumor has been performed. Leptomeningeal dissemination of a pilocytic astrocytoma is seen so infrequently that no standard therapy is established. Since these metastases may occur even up to 2 decades after primary tumor resection, long-term follow-up is indicated. In case of spinal metastases, surgical treatment should be performed if feasible. Otherwise observation should be followed and/or chemotherapy should be initiated. Introduction Leptomeningeal spread of primary tumors of the central nervous system (CNS) through cerebrospinal fluid (CSF) is uncommon. It may appear in tumors like medulloblastomas [World Health Organization (WHO) grade IV], ependymomas and high-grade gliomas, but exceedingly rare in low-grade gliomas. Till now, only ten cases of pilocytic astrocytoma with dissemination in the spinal meninges have been reported. Interestingly, only three of these ten cases have been described in children and the other seven in adult patients. This may be due to the fact that intradural extramedullary spinal dissemination occurred even 10-20 years after the primary surgery of the cerebral tumor. Although the first report of spinal seeding of pilocytic astrocytomas was published in 1976, no standard treatment modality is established until today, due to its rarity. Here, we report the case of a 13-year-old boy with a pilocytic astrocytoma of the right thalamus and leptomeningeal dissemination in the spinal meninges. Case Report A 13-year-old child presented to our department after he had undergone excision of the Right Thalamic Lesion 8 months ago in our hospital. Histological examination revealed a pilocytic astrocytoma. After the first surgery and before the diagnosis was made, the child developed Low Back ache which was severe and child had difficulty in walking. On examination Tone was increased in both Lower limbs with clonus with Bilateral plantars upgoing. MRI Brain with whole spine screening was performed. The tumor did not show any further growth in the 10 month period. MRI of the spine showed multinodular tumors (intradural/extradural), which indicated a leptomeningeal spread. On Neuropathological examination the lesion is composed of cells arranged in bundle and sheets. Cells have round to oval, vesicular nuclei with bipolar hair like fibrillary cytoplasmic process. There are numerous brightly eosionophilic rosenthal fibers noted. Vessels show glomeruloid vascular proliferation. Focal areas show oligodendral pattern of arrangement of cells. The scanty fragments showed no mitoses and no necrosis. The tumor cells showed a strong positivity for the glial fibrillary acidic protein (GFAP). MIB-1 labeling was typically low, showing proliferating activity in up to 2% of tumor cells. However, since we did not observe a markedly mucoid matrix and a predominantly angiocentric cell arrangement, which is typical for this entity, the tumor was classified as pilocytic astrocytoma (WHO grade I). Biopsy of the sacral lesion was performed which revealed out to be pilocytic astrocytoma. Patient is being sent to Radiotherapy and chemotherapy for further management. Discussion Pilocytic astrocytomas are low-grade gliomas corresponding to WHO grade I with an excellent prognosis, particularly if complete resection can be achieved. The present case reveals a cerebral low-grade astrocytoma growing from the Right thalamus with leptomeningeal spread all over the
spine through the CSF. Till now, only two cases concerning pilocytic astrocytomas of the thalamus metastasizing into the spine have been published in the literature although the WHO classification of tumors of the CNS described the Thalamic as the usual primary site of neuraxial seeding within this tumor entity. Other pilocytic astrocytomas with spinal dissemination occurred in adult patients almost two decades after the primary surgical treatment emphasizing a long-term follow-up in patients with diagnosed pilocytic astrocytoma. Nevertheless, the prognosis of this tumor remains excellent after resection of a solitary spinal metastasis since the proliferative activity is low. Interestingly, despite metastasizing, these tumors do not seem to show any signs of secondary malignization. Indeed, very few examples of pilocytic astrocytoma undergoing malignant changes have been reported. Since most of them had previously undergone radiation therapy, it should be taken into account that radiation may promote malignant transformation. In the present case we performed a partial resection of the cerebral tumor, since invasion into the hypothalamus did not allow complete resection. Radiologically, an intradural contrast enhancement through a long distance was seen, building a thin film of tumor cells, which did not deliver a specific target for surgical resection. Under these circumstances we performed partial tumor resection around the nerve roots S2 and S3 where the tumor seemed to be solid. In addition to our case, two of three pediatric cases with spinal dissemination occurred after thalamic astrocytomas revealing that contact to the ventricular system seems to increase the possibility of spinal cord dissemination. Because of the rarity of dissemination within this benign tumor entity, a standardization of treatment misses. Shapiro et al. advocate an aggressive surgical treatment, while Fellgiebel et al. admit that treatment of these cases is always difficult because of the lack of a standard therapy scheme. Chemotherapy does not seem to be the optimum therapeutic approach since at least vincristine and carboplatin did not exhibit good treatment results in one patient. Again, because of the very few reports it is impossible to conclude if a therapeutic approach with chemotherapy could be efficient or not. Since in our case the meninges were infested by tumor over a long distance, complete surgical resection was not possible. Therefore, we decided, after many consultations with neurosurgeons as well as in other expert pediatric oncology centers to undergo biopsy of the lesion and then choose a chemotherapeutic approach and the tumor growth should be observed in the 3-month-follow-up. We will review the patient after 3 months to follow with MRI Whole Spine to look for growth of the tumor, if any further increase of the tumor is noted, our plan is to start chemotherapy. Conclusions Leptomeningeal dissemination of pilocytic astrocytomas into the spine is rare. Even two decades after resection of the primary tumor metastases of the spine could be observed. Fortunately, there is usually no secondary malignisation. Long-term follow-up is important for early detection of multifocal spreading of pilocytic astrocytomas and MRI of the spine should be performed always when the primary pilocytic astrocytoma is in proximity to the ventricular system. Treatment options in cases of spinal dissemination are the surgical tumor resection in cases of solid lesions as a first line therapy, we recommended that further followup and observation of tumor growth and/or chemotherapy, if the tumor is disseminated over a great area of leptomeninges.

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Paper Id: PNSP043

Title: Moya moya as manifestation of varicella associated vasculopathy – Case Report and review of literature

Dr. Shishir Kumar*

Co-authors – Dr. Shibu Pillai

Abstract: This report is intended to highlight the role of Varicella zoster virus infection in the development of moyamoya disease especially among people who are not of east-Asian origin. We report on a 11-year old Indian girl who developed moyamoya disease following an episode of chicken pox. In view of progressive and recurrent right hemiparesis and seizures, she underwent combined direct and indirect cerebral revascularization surgery-left superficial temporal artery (STA) to middle cerebral artery (MCA) bypass along with encephalo-duro-arterio-myo-pericranial (EDAMPS) synangiosis followed by right STA-MCA bypass along with EDAMPS five months later. Her seizures and ischemic symptoms improved following surgery. Varicella zoster virus infection commonly presents as fever, myalgia and rash in the primary stage and later as shingles in the latent period. However, varicella can also cause vasculopathy with a predilection for cerebral arteries. Moyamoya is characterized by narrowing of the distal internal carotid (ICA) and proximal portions of the anterior (ACA) and MCA due to intimal thickening and smooth muscle cell proliferation, which is like that seen in VAV. Moyamoya may be one of the manifestations of VAV in the non-east-Asian population and must be treated aggressively to avoid a poor outcome. Key words- Varicella associated vasculopathy, moyamoya disease, ICA stenosis.

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Paper Id: PNSP044

Title: A CASE OF EMERGENCY HEMISPHEROTOMY

Dr. Suchanda Bhattacharjee*

Co-authors – S A JABEEN

Abstract: 14 year old boy of nonconsanguinous parentage, delivered by normal vaginal delivery, normal birth and development without any significant family history, or febrile seizures. At 6 years of age he first had a nocturnal GTCS then it was followed by frequent right focal seizures which were occurring daily, slowly he developed weakness of right upper and lower limb, 20 days back he had a febrile episode and since then developed partial convulsive status which was refractory to AEDs, he was electively intubated and brought here. On admission we started iv midazolam followed by thiopentone infusion without any clinical response. CT scan was available. This showed left hemispheric atrophy. MRI was done which confirmed similar findings with a hyperintensity in the right motor cortex. Wada test could not be done in view of patients critical illness, patient was operated and underwent hemispherotomy and seizure was controlled.

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Paper Id: PNSP045

Title: A CASE SERIES ON PEDIATRIC THALAMIC GLIOMAS

Dr. Suchanda Bhattacharjee*

Co-authors – KIRAN KS, MURALI KRISHNA KOTHALA, MEGHA S UPPIN

Abstract: Thalamic gliomas are difficult to manage and has a long term association with the treating surgeon. The aim was to study the behavior of pediatric age group thalamic gliomas. This retrospective review was carried out at NIMS, Hyderabad. 15 pediatric cases between 2014 to 2017 july were considered in this analysis. Clinical, radiological and pathological findings were analysed and correlated with the surgical outcome. There were 10 males and 5 females. All were unilateral gliomas who opresented with either focal neurological deficit or raised intracranial pressure. All were unilateral in this small series and 40% required a CSF diversion. The maximum resection achieved was near total in view of the eloquent location and functional preservation. More then one surgery was done in 4 cases. 2 cases expired which was of high grade on histopathology. Thalamic gliomas require a close follow up in view of the incomplete surgical resection in majority of cases. Radiotherapy is an adjunct to surgical treatment and prognosis remains good in lower grades as classically described.

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Title: Evaluation of the extent of surgical excision on outcome of OPHG in pediatric age group- Institute experience

Dr. Ramanadha reddy Kanala*

Co-authors – Dr Suchanda Bhattacharjee, Dr Murali Krishna

Abstract: Aims/objective - To see the role of radical surgery in optic pathway hypothalamic gliomas management. Material and methods- It is a Retrospective study. Case files were retrieved from 2005 to 2017. All OPHG patients under 20 yrs of age group were included in the present study. Total 35 patients were included in the study. They were divided into 3 groups. Group A were, who had undergone biopsy, Group B included the ones who had undergone conservative surgery (decompression of cyst/partial excision) and group C included the patients who had undergone radical surgery. We retrieved data from radiotherapy department to record whether patients received CT, RT, CT+RT or no adjuvant therapy at all. Immediate post op period, we recorded visual changes, endocrinological problems, sensory and motor deficits in each group. In follow up we measured progression free survival, overall survival in each group. Results – In total 35 patients, the group A had 12 patients (34.4 %), group B had 10 patients (28.5 %) and group C patients had 13 (37.1 %). In each group we subdivided the patients on the basis who underwent CT, RT and CT+RT or no adjuvant therapy. Average age was 10 yrs. Male to female ratio was 2:1. Median follow up was 7 yrs. All Group A patients underwent CT with age less than 5 yrs else RT for more than 5 yrs age. Progression free survival and overall survival were similar in all groups but morbidity was less in biopsy group. Conclusions – It is documented that radiologically proved OPHG can be treated with chemoradiotherapy. While some other studies documented that biopsy is essential to rule out other pathologies like craniopharyngioma, tubercular those are mimicking OPHG. But majority of the surgeons perform either partial excision or radical surgery. The present study reports that progression free survival, overall survival are good in biopsy group because of the location of these tumors though they are benign. Even the partial excision of the tumors had high morbidity. We conclude that if patients had vision problems then decompression or partial excision of lesion is necessary otherwise biopsy of these tumors is enough from surgical side. Keywords-OPHG-optic pathway hypothalamic glioma, RT-radiotherapy, CT-chemotherapy.

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Title: Factors influencing survival in children with Atypical Teratoid Rhabdoid Tumours (ATRT): An Institutional Experience

**Co-authors** – Dr Dhaval Shukla, Dr Subhas K Konar

**Abstract**: Factors influencing survival in children with Atypical Teratoid Rhabdoid Tumours (ATRT): An Institutional Experience Aims and Objectives: To evaluate the factors influencing overall survival (OS) and event free survival (EFS) in children with ATRT. Materials and Methods: This was a retrospective study of children diagnosed to have ATRT at our institute in last decade. Inclusion criteria were children less than 16 years and tumour histology of ATRT and immunohistochemistry showing loss of expression of INI1. Data was obtained from hospital records and telephonic interview of parents. Survival was calculated from the date of diagnosis. A univariate analysis was done to determine the significance of various variables and later a survival analysis was done to determine the level of significance. Results: A total of 34 children were operated with a male to female ratio of 1.8:1. 62% of tumours were infratentorial. Five patients were lost to follow up. At the time of analysis 23 children had expired. On univariate analysis, factors that had a statistically significant influence on OS and EFS were extent of resection (p=0.012; 0.015), adjuvant therapy (p=0.000; 0.001) and rhabdoid cell percentage (p=0.004; 0.005). Factors such as age, sex, location, tumour size, symptom duration, preoperative Lansky performance status and MIB index had no statistically significant influence on survival. On survival analysis, the median OS and EFS was better for those who completed adjuvant therapy vs. those who did not receive adjuvant therapy (OS: 22.7months vs. 3.5months; EFS: 10.9months vs. 3.5months), those who underwent gross total resection vs. those who underwent partial decompression (OS: 10.9months vs. 2months; EFS: 8.9months vs. 2.5months) and those with less than 50% rhabdoid cells in the biopsy specimen compared vs. those with more than 50% rhabdoid cells (OS: 10.9months vs. 3.7months; EFS: 8.9months vs. 3.5months). The results were statistically significant. Conclusion: Achieving gross total resection should be the aim of surgery depending on location, and these children should be subjected to upfront adjuvant treatment. Higher rhabdoid cell% indicates a poor prognostic factor. Keywords: Atypical Teratoid Rhabdoid Tumors; ATRT; adjuvant treatment; survival; embryonal tumor.

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Paper Id: PNSP049

Title: BASE OF SKULL FRACTURE IN PEDIATRIC HEAD TRAUMA

Dr. RAVI SHEKHAR*

Co-authors – DR. K. GANESH, DR. V. VIVEK, DR. BHASKAR NAIDU

Abstract: Twenty six cases of base of skull fracture were diagnosed among 56 cases of pediatric head trauma and were analyzed in the last two and a half years, for clinical presentation, course in the hospital and outcome. MATERIALS AND METHODS: This is a longitudinal study of patients in the pediatric age group (<18 years of age) who presented with history of head trauma. Clinical presentation, intracranial findings, course in the hospital and outcome of these patients were analyzed. RESULTS: Of total number of 202 patients who presented with head injury, 56 cases (27.7%) were in pediatric age group. Out of the 56 cases of pediatric head trauma, 26 children (46.4%) were found to have base of skull fractures. Of these 26 cases, 18 cases (69.2%) were boys and 8 cases (30.8%) were girls. The mean age of the children was 7.5 years; however most of the cases fell in the age group of 1-6 years. The most common cause for head trauma was fall from a height in 14 cases (53.8%). Road traffic accident was the cause of head trauma in 10 cases (38.4%). One child (3.84%) was hit by a bull and one child (3.84%) sustained head injury after fall of a TV on the head. Among these 26 cases, loss of consciousness was the most common presenting feature found in 18 cases (69.2%), followed by vomiting in 6 cases (23%) and headache in 5 cases (19.2%). Thirteen (50%), 7 (26.9%), 6 (23.1%) of the cases were found to have mild, moderate and severe head injury respectively. Raccoon's eye sign was seen in 8 children (30.8%). Eleven children (42.3%) who had mild head injury did not have any clinical signs on examination. Only one child (3.84%) had active CSF rhinorrhea. No child had cranial nerve injury. In the CT scans, 12 (46%), 10 (38.4%) and 8 (30.6%) cases were found to have fracture involving the base of anterior, middle and posterior cranial fossa, respectively. Acute hemorrhagic cerebral contusion was the most common intracranial finding seen in 12 children (46.1%). Facial fractures in 4 children (15.3%), acute EDH in 5 children (19.2%) and SDH in 7 children (26.9%) were the other findings. Seven out of 26 patients (26.9%) required surgical treatment for their associated CT scan findings. Indications for surgery included acute EDH in 2 cases (7.6%) acute SDH in 2 cases (7.6%), facial fractures in 2 cases (7.6%) and CSF rhinorrhea in one case (3.84%). Rest of the 19 children (73.3%), were treated conservatively. Twenty four (92.3%) children had a good outcome (GCS of 15) at the time of discharge and follow up. There were two mortalities (7.7%) in this study group. Both the cases had severe brainstem injuries along with base of skull fractures. Comparison of these results with adult population will be highlighted in the presentation. CONCLUSION: Base of skull fracture is less common in pediatric head trauma compared to adults. CSF leak and cranial nerve palsy following base of skull fracture is rare in children. Children with mild head injury without clinical signs can have base of skull fractures. Hence CT scan should be performed even in children with mild head injury. KEYWORDS: Base of skull fracture, Head trauma, Pediatric.

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Paper Id: PNSP053

Title: CADAVERIC STUDY ON THE VARIATIONS IN THE NORMAL COURSE OF MOTOR BRANCHES OF SCIATIC AND TIBIAL NERVES (SUPPLYING HIP, KNEE AND ANKLE JOINT MUSCLES)

Dr. JUJJUVARAPU DHEERAJ*

Co-authors – Dr. A. K. PUROHIT, Dr. ANANTH EGOOR

Abstract: Aims and Objective: To describe the precise locations of motor branches and muscle entry points to the hamstring musculature (Semi membranosus, Semitendinosus and Biceps femoris) and calf muscles (medial and lateral Gastrocnemius and Soleus) and define these locations in relation to bony landmarks which will facilitate greater clinical efficacy for performing neuroablative procedures (SMF). Materials and Methods: A descriptive study involving anatomic dissection of the peripheral nerves (sciatic and tibial) of 20 adult unembalmed human cadavers from the department of forensic medicine, Osmania medical college, Hyderabad was undertaken. The sciatic nerve and tibial nerves with their branches to semitendinosus, semimembranosus, biceps femoris, the medial and lateral heads of gastrocnemius and the soleus were dissected from the main trunk until they ramify into its component fascicles inside the muscle belly. All the data were captured by still photography using SONY CYBERSHOT DSC-WX150 Exmor R 18.2 MP camera. Measurements were made of the intra and extra trunkal parts of the motor branches (TEBP and MEP) of the sciatic and tibial nerves supplying the semitendinosus, biceps long head, semimembranos, the medial and lateral heads of gastrocnemius and soleus, with respect to bony landmarks - the ischial tuberosity, greater trochanter, the intercondylar line (distance between the two outermost bony prominences of the medial and lateral femoral condyles). Mean and standard deviation (SD) of all these values were calculated and the results were tabulated. Results: The mean distances of TEBP’s of hamstring muscles were: Semi membranosus: [TEBP: 6.95cm (SD=1.57); TEBP% (as % of femur length): 21%(SD=4.5)]; Semi tendinosus: [TEBP: 6.75cm(SD= 3.19); TEBP% (as % of femur length):20%(SD= 9.42)]; and biceps femoris: [TEBP: 5.7cm(SD= 2.25); TEBP% (as % of femur length): 17%(SD= 6.21)]. The mean distances of MEP’s of the hamstring muscles were: Semi membranosus: [MEP : 13.6cm(SD=4.4); MEP% (as % of femur length): 40.85%(SD=13)]; Semi tendinosus: [MEP: 11.6cm(SD= 5); MEP% (as % of femur length): 35.05%(SD= 15)]; biceps femoris: [MEP: 11.75cm(SD= 4.07); MEP% (as % of femur length): 34.95%(SD=11)]. The mean distance from intercondylar line to MEP’s to the medial gastrocnemius, lateral gastrocnemius and soleus were 1.75cm(SD=0.85) below, 2.3cm(SD=0.92) below and 6.25cm(SD=1.42) below the inter-condylar line respectively. The mean distance from intercondylar line to the TEBP’s of the median gastrocnemius, lateral gastrocnemius and soleus were 1.05cm(SD=1.14) above ; 0.35cm(SD=0.81) above ;1.9cm(SD=1.25) below the inter-condylar line respectively. Conclusion: The motor branches of the sciatic and tibial nerves show variations in the number, patterns and the level of branching. We suggest the following skin incisions for SMF of the Sciatic and Tibial nerves: Approximately 9cm vertical skin incision over the posterior midline of the thigh, starting from 5cm below the midpoint of the distance between superomedial part of ischial tuberosity and the superolateral part of greater trochanter. Approximately 9 cm incision over the posterior midline of the popliteal fossa extending 2cm above and 7 cm below the inter epicondylar line (distance between medial and lateral epicondyles) of the femur. Key words: Trunkal Exiting Branch Point (TEBP); Muscle Entry Point (MEP)

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Paper Id: PNSP054

Title: Outcome of Caudal Lumbosacral Selective Posterior Rhizotomy in the management of spastic diplegia due to cerebral palsy (A prospective cohort study in 35 children)

Dr. PAVAN KUMAR PELLURU*

Co-authors – PAVANKUMAR P

Abstract: Background and Objective To assess the outcome of partial L5 and S1 (+/- 1) posterior roots ablation for relief in harmful resistant diffuse spasticity and to measure resulting changes in motor functions in children with cerebral palsy. Materials and Methods This prospective cohort study included 35 children having spastic diplegia due to cerebral palsy from January 2011 to January 2016 with a mean age of 10.6 (4 - 14) years and M: F ratio of 5:1. The children were assessed pre and post operatively using Modified Ashworth Scale (MAS), Selective Voluntary Control (SVC) Grade, Gross Motor Function Classification System (GMFCS), Wee FIM (locomotion) and other motor functions. All the children were given physical therapy pre and post operatively. Under general anaesthesia without muscle relaxants limited lumbar laminectomy (L4, L5) was performed. Anterior roots were mechanically stimulated to identify the harmful spastic muscles (detected during pre operative clinical evaluation) and posterior roots were ablated to the extent of 1/3rd to 2/3rd bilaterally based on pre and post operative various clinical findings. Selective Motor Fasiculotomy (SMF) was required (n=7) with ablation of around 50% component fascicles for the residual harmful resistant spasticity after 6 months of SPR and physical therapy(obturator nerve for hip adductors, tibial nerve for calf muscles, ankle invertors and toe flexors). Results During a mean follow up of 30 (6 - 60) months, there was statistically significant reduction (p value < 0.001) in spasticity (pre and post operative MAS- 2.43, 2.12, 1.18 and 2, 1.7, 0.5 in ankle plantar flexors, knee flexors and hip adductors respectively). There was significant (p < 0.001) improvement in SVC (pre and post operative 3.29, 2.26 and 3.76, 2.85 knee and ankle joint movements respectively). There was significant (p <0.001) improvement in the locomotor component of WeeFIM scale also. GMFCS levels improved by one level in 45.7 % (n=16) children. There were no complications during the follow up period. Seven children despite having reduction in spasticity did have some harmful spasticity in the follow up, improved significantly (p < 0.005) following SMF (obturator-5, tibial-2). Conclusions The quite limited less ablating and safe caudal lumbosacral SPR (L5 and S1) significantly relieves spasticity in all the targeted as well as to some extent in other muscle groups (hip adductors). These results in considerable improvement in the SVC, locomotor functions and one level improvement in GMFCS (in 50% of children), during a mean follow up of 30 months. However, children with residual harmful spasticity (20%) do require additional peripheral procedures (SMF).
Paper Id: PNSP055

Title: Outcome of Selective Motor Fasiculotomy in the Management of Lower limb Spasticity due to Cerebral Palsy (A prospective cohort study in 23 children)

Dr. PAVAN KUMAR PELLURU*

Co-authors – ANIRUDDH KUMAR PUROHIT, ANEEL KUMAR P, NAVEEN KUMAR BALANE

Abstract: Abstract Objective To assess the outcome of Selective Motor Fasiculotomy (SMF) on relief in lower limb harmful resistant focal spasticity and to measure the resulting changes in motor functions in children with cerebral palsy. Materials and Methods This prospective cohort study included 23 children with cerebral palsy, age ranging from 5-18 (mean10.21) years and M: F ratio is 5:1 having spasticity in the lower limbs. All the children were assessed pre and post operatively by Modified Ashworth Scale (MAS), Selective Voluntary Control (SVC) grade and locomotor Abilities (kneel walking, squat to stand, standing and walking). SMF was performed on obturator (n=8), sciatic (n=11) and tibial nerves (n=23) for relief of spasticity in hip adductors, knee flexors and ankle plantar flexors in 4, 6 and 13 children respectively. These were followed for a mean of 30 (6-60) months. All the children were given physical therapy pre and post operatively. Results During a mean follow up of 30( 6 – 60) months. There was statistically significant reduction in spasticity (MAS, p < 0.005) from 1.57 to 0.58, 1.92 to 0.08, 1.92 to 0.31 in hip adductors, knee flexors and ankle plantar flexors respectively. Pre and post operative SVC grade also improved from 3.75 to 4.00, 4.08 to 4.17, 2.65 to 3.35 in hip adductors, knee flexors and ankle plantar flexors respectively but not significantly (p > 0.005). There were no complications and spasticity did not recur during this period of follow up. Conclusions The SMF of obturator, sciatic and tibial nerves significantly relieves spasticity in the targeted muscles and thereby improves SVC and motor abilities in children having cerebral palsy. It is quite a safe procedure and the spasticity does not recur during a mean follow up of 30 months.

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Paper Id: PNSP056

Title: CHIARI MALFORMATION IN PAEDIATRIC POPULATION - STUDY OF 25 CASES

Dr. Ashwin Pai*

Co-authors – Dr. Suchanda Bhattacharjee, Dr Kiran S

Abstract: Aim - To study the incidence of cervical vertebral anomalies in CHIARI patients. Material and methods - prospective and retrospective study involving paediatric patients with chiari admitted in Nims, tertiary neuro centre in year 2011-2017. MRI, CT and XRAY were evaluated. Result - Out of 25 patients, 8 patients were found to have cervical vertebral anomalies ranging from basilar invagination, Atlanto axial dislocation, scoliosis and hemivertebrae. Conclusion - it is essential to get a cervical spine imaging in chiari malformation patients.

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Paper Id: PNSP057

Title: Posterior fossa tumours in Paediatric population: Our experience

Dr. Vinay Kumar Gurumath*

Co-authors – B. Vivek Joseph

Abstract: Posterior-fossa tumours in pediatric population: Our experience Vinay Kumar Gurumath, B. Vivek Joseph Department of Neurological Sciences Christian Medical College, Vellore. Aims & Objectives: To study the various pediatric posterior-fossa tumours surgically treated by a single surgeon in our institution. The types of posterior-fossa tumours, clinical features, surgical management & outcomes were studied. Materials & methods: This retrospective study included all consecutive patients with posterior-fossa tumours who underwent surgery by the senior author in our hospital from 2007 to 2017. Clinical records, imaging & telephonic follow-ups as well as outpatient department visits were used to collect the data. Results: There were 62 patients below the age of 21 years. The mean age at presentation was 12.5 years. Majority were males (53%). The most common tumour was Medulloblastoma (39%). The commonest site of tumour origin was from Vermis (51%). Common presentations were headache (83%), vomiting (69%), gait ataxia (50%). Papilledema (69%) and cerebellar signs (56%). 35% had hydrocephalus and 26% required the preoperative CSF diversion procedures. Average size of the tumour was 4.35 cm. Surgical approaches used were midline suboccipital craniectomy (71%), retromastoid suboccipital craniectomy (24%), paramedian suboccipital craniectomy (5%). The extent of resection varied from biopsy (5%), partial/subtotal resection (23%), near total resection (19%) to total/radical resection (53%). The most common complication was CSF leak (13%), and there was one mortality. Adjuvant therapy was given in 37%. Clinical follow-up of 3 months or more was available in 42 (68%) [mean 27 months] and radiological follow-up in 35% [mean 15 months]. Tumour recurrence was seen in 11%. Conclusions: 62 cases of posterior-fossa tumours in age < 21 yrs had varied histopathological diagnosis. 81% were intra-axial tumours. Medulloblastoma was the most common tumour. In majority, Midline suboccipital craniectomy and radical excision was done. Tumour recurred in 11% cases and there was one mortality on followup.
Paper Id: PNSP058

Title: Surgical management of complex (multiloculated) hydrocephalus in the pediatric age group- A retrospective study

Dr. Siddharth Vankipuram*

Co-authors – Dr B.K Ojha, Dr Chittij Srivastava, Dr Anil Chandra, Dr Sunil K Singh

Abstract: INTRODUCTION: Multiloculated hydrocephalus is characterized by the enlargement of discrete fluid filled compartments in the form of intraventricular and periventricular cysts. These isolated enlargements may or may not be communicating. They form due to complications either from bacterial or fungal meningitis, intraventricular hemorrhage or other inflammatory processes. Additionally, they can also occur due to overdrainage in an existing shunt-treated hydrocephalic condition. The formation of discrete fluid filled compartments is attributed to septations and trabeculations within the ventricular cavity. Loculated hydrocephalus can either be uniloculated or multiloculated and are treated as distinct entities. Patients with multiloculated hydrocephalus often require repeated surgeries in the form of shunt revisions or a combination of endoscopic fenestrations and endoscopic third ventriculostomies. The present study reviews the etiology, clinical presentation, radiological features and surgical outcomes in our institution. We also assess the different diagnostic modalities that help play a role in diagnosis and final outcome. This in our setting, with cost a major factor and large patient influx can help predict the most effective solutions.

MATERIALS AND METHODS 59 patients of multiloculated hydrocephalus identified over a nine year period ranging from 2009 to 2017 were included in the study. These patients were diagnosed either on contrast CT brain, CT ventriculogram or MR ventriculography. The demographics, radiological imaging and surgical outcomes were collected and analyzed. Patients with uniloculated hydrocephalus due to conditions like isolated fourth ventricle and entrapped temporal horn were not included.

RESULTS: A total of 59 patients were identified with an average age of 6.1 months at first presentation. There were 48 males and 11 females with a male: female ratio of 4:1. 23 patients had a history of perinatal complications like meningitis or pneumonia requiring ICU care while 7 patients had a history of prematurity and low birth weight. Amongst these 59 patients, 41 of them underwent an initial endoscopic procedure and 16 underwent a shunt procedure. Endoscopic procedures included Endoscopic third ventriculostomy, septostomy, aqueductoplasty and endoscopic fenestration of cysts. Two of the 59 patients were initially started on antibiotics for associated intracerebral abscess. No patients in our study were subjected to open craniotomy and fenestration. On follow up, it was found that 16 patients had undergone a subsequent shunt surgery (either new or revision of an existing shunt) while 8 patients had undergone subsequent endoscopic procedure.

CONCLUSIONS: Multiloculated hydrocephalus is a complex neurosurgical condition which requires a multi-disciplinary approach to management. Both traditional shunt surgery and endoscopic procedures are effective in improving the outcomes. CT ventriculogram is a cost effective way of diagnosing these patients and may help in accurately determining the communication between the different fluid filled compartments. This could ultimately predict the best surgical options for these patients. Keywords: Multiloculated hydrocephalus, endoscopic surgery, endoscopic fenestration, retrospective study.
Title: Occipito - C2 Posterior fixation in young children for Basilar Invagination and atlantoaxial dislocation using distal radius plates: A cost effective solution to the problem

Prof. Manoj Tewari*

Abstract: Aims: To provide rigid fixation after reduction, distraction and posterior decompression in young children with congenital cranio vertebral anomalies associated with developmental bony and soft tissue anomalies. Material and methods: 4 children aged between 3-7 years presented with neck tilt, neurological deficits. CT cranio-vertebral junction was done with axial cuts and coronal and sagittal reconstruction were done to see for facet joints and lateral masses. CT Angiography was also done to look for the course of vertebral arteries, MRI of CVJ was done as required for preoperative evaluation and surgical planning. Imaging studies revealed atlanto-axial dislocation basilar invagination with malformed lateral masses and facet joints with assimilation of C1 arch posteriorly. The occipital bone was thin (5 mm in thickness) and C2 lamina also thin which made it is difficult to use standard instrumentation and a modification is required. Therefore posterior fixation Occiput- C2 lamina was done after intra-operative reduction, distraction and widening of foramen magnum using titanium radial plates and mini screws. Autologus rib graft and bone obtained by widening foramen magnum was used for bony fusion. Results: In the immediate post-operative period all patients improved. One patient had clinical worsening on day 2. CT scan of CV Junction along with CT Angiogram was done which did not reveal any abnormality. Patient improved after 5 days and developed grade 3/5 power. At the time of discharge all patients improved from their pre-operative status. Patients were discharged on collar and are improving in follow-up. Conclusion: This modified technique is safe and cost effective alternative in the surgical management of basilar invagination and congenital AAD in children with malformed joints.
Paper Id: PNSP063

Title: Clinical and health policy related challenges in paediatric brain tumours

Dr. SHUBHI DUBEY*

Co-authors – Dr. C Srivastava, Dr B.K. Ojha, Dr S.K.Singh, Dr. Sujeet K Kar

Abstract: TITLE- Clinical and health policy related challenges in paediatric brain tumours OBJECTIVES- To study the clinical profile of the brain tumors in pediatric age group treated at a tertiary neurosurgical referral center and to assess the quality of life of the caregiver, attempting to understand the challenges in the management. METHODS- This was a prospective study, conducted at Department of neurosurgery at King George’s Medical University, Lucknow from January 2017 to June 2017. Participants were consecutively admitted children £ 18 yrs with histologically confirmed primary brain tumor, and the caregiver of these patients. Demographic profile of each child was collected with respect to age, sex, clinical presentation, anatomical location, surgery, post-operative complications, histopathology, adjuvant treatment and status at 3-month follow-up. Caregiver of these patients were interviewed and their quality of life was assessed based on WHOQOL-BREF questionnaire, preoperatively and at 3 month follow up. RESULTS- A total of 56 patients were included in the study. Total mortality of 30% was noted. Histopathology of 31 patients (most common being medulloblastoma, ependymoma, craniopharyngioma) suggested requirement of adjuvant radiotherapy. Only 5 of the surviving patients could receive radiotherapy. Reasons for these outcomes were reflected in the quality of life of the caregiver, with the financial domain affected the most and being the most common reason for incomplete treatment. CONCLUSION- To get results closer to the western population, a more comprehensive and multidisciplinary treatment approach with a well-planned use of our resources, is required for management of pediatric brain tumors in our Indian socio-economic set up. The need of the hour is to pay equal attention to post-operative follow-up and rehabilitation of these children.

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Title: NEUROENDOCRINE DYSFUNCTION IN PAEDIATRIC PATIENTS WITH SUPRASELLAR TUBERCULOMA ON ATT

Dr. Uday Goutam Nookathota*

Co-authors – Dr Prakash Rao Gollapudi, Dr Karla Ravi, Dr N Prathap Kumar

Abstract: AIMS AND OBJECTIVES: The neuroendocrine dysfunction is not well studied in patients with tuberculous meningitis, especially in paediatric population. We aimed at studying the pattern of endocrine dysfunction, the structural changes occurring in hypothalamic and pituitary region and correlating factors related to outcome in patients with tuberculous meningitis, who are on ATT. MATERIALS AND METHODS: We report three cases of tuberculous meningitis in paediatric patients who are taking ATT, developed endocrine dysfunction at later stage. These children represented with panhypopituitarism including diabetes insipidus (DI) during their clinical and neurological improvement phase of tuberculous meningitis. These patients were subjected to clinical, laboratory and hormonal evaluation along with neuroimaging of hypothalamic pituitary region. All the three patients were treated with antituberculous drugs along with corticosteroids as per WHO guidelines. The clinical outcomes of the three patients were assessed at the end of 3 months. RESULTS: In all the three patients the dysfunction in hypothalamopituitary axis including diabetes insipidus (DI) is observed. Significant basal exudates were observed in neuroimaging. They were supplemented with corticosteroids along with ATT. The significant recovery from the pituitary dysfunction was observed and steroid supplementation was tapered. CONCLUSION Hypopituitarism has been documented in 20% of patients, years after recovery from tuberculous meningitis in childhood. The cause appeared to be tuberculous lesions affecting the hypothalamus, pituitary stalk and gland. Diabetes insipidus (DI) manifests more often in children following tuberculous meningitis than in adults. Careful evaluation of patients with tuberculous meningitis with basal exudates is needed for early identification and management of pituitary dysfunction.
Paper Id: PNSP065

Title: Study on outcome of Encephalo Duro Arterio Synangiosis (EDAS): In Childhood Moya Moya Disease (MMD).

Dr. Sudipta Kumer Mukherjee*

Co-authors – Dr. Haradhan Debnath

Abstract: Introduction: EDAS is an indirect revascularization technique used to create an indirect bypass between intra and extracranial blood vessels. This technique is used for childhood MMD. Objective: It is important to study the clinical and angiographic outcome, as well as operation technique of EDAS. Results: Thirteen EDAS procedures did for Twenty-six patients. 23 patients had good Radiological and clinical outcomes. 3 out of 26 patients develop post-operative stroke. Among 3 post operative stroke, 2 improved and 1 patient expired. Conclusion: This technique is a useful and simple solution for correcting childhood Moya Moya Disease.

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Paper Id: PNSP066

Title: Anal extrusion of Ventriculoperitoneal shunt in a child with Dandy walkers syndrome

Dr. Sunil B.*

Abstract: Aims & Objectives: Aim of this paper is to report a case of extrusion of Ventriculo peritoneal shunt tube through anus in a one year female child (k/c/o dandy walker malformation) treated with placement of ventriculo peritoneal shunt for hydrocephalus. Results / Discussion: The exact cause of such extrusion is not known. Unusual migration of distal catheter tip of VP shunt is a rare and bowel perforation is reported to occur between 0.1% and 0.7%. The possible factors responsible for this complication are thin bowel wall in children, sharp and stiff end of the VP shunt, use of trocar by some surgeons, chronic irritation by the shunt, previous surgery, infection and silicone allergy. Conclusion: In view of the potential for meningitis prompt and aggressive management is essential to avoid morbidity and mortality. Keywords: Extrusion through anus, Hydrocephalus, Ventriculoperitoneal shunt, Dandy walker malformation.

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Paper Id: PNSP067

Title: HYPOPHYSITIS MIMICKING A PITUITARY MACROADENOMA

Dr. Abhirama Chandra Gabbita*

Co-authors – Dr. Vivek.V, Prof. K.Ganesh

Abstract: Hypophysitis mimicking a Pituitary Macroadenoma Introduction: Autoimmune hypophysitis (AH), also called lymphocytic hypophysitis, is a rare cause of pituitary gland inflammation, more so than granulomatous and xanthomatous hypophysitis. It must be carefully differentiated from common pituitary lesions due to the recurrent nature of the disease. AH usually occurs in pregnant or postpartum women and presents with symptoms of raised intracranial pressure, rarely presenting in childhood and adolescence. Initial treatment is glucocorticoid therapy and surgery if symptoms persist. Recurrence or persistent symptoms may require immunosuppressive therapy. Case History: A sixteen year old adolescent girl presented with three months of headaches, diplopia, polyuria, polydipsia and secondary amenorrhea. Clinically, she had right lateral rectus palsy with normal pupillary reflexes. There was no other cranial nerve involvement or focal neurological deficit. Suspecting a pituitary tumor, magnetic resonance imaging of the brain was done, which showed a large enhancing mass in the sellar and suprasellar region with figure of ‘8’ configuration, indicative of a pituitary macroadenoma. Blood investigations were suggestive of central diabetes insipidus, central hypothyroidism, hypocortisolism, hyperprolactinemia with low gonadotropin levels. She underwent a craniotomy for excision of the mass. Histopathological evaluation showed plasma cell rich lesions and lympho plasmocytic infiltration suggestive of lymphocytic hypophysitis or langerhans cell histiocytosis. She was started on hydrocortisone, levothyroxine and desmopressin. Following surgery her symptoms subsided and her thyroid profile normalized. Cyclical estradiol and medroxyprogesterone were started for secondary amenorrhea. Four months post surgery, she presented again with headache, diplopia and polyuria. MRI brain was repeated which showed reduction in size of the sellar and suprasellar mass. However, meningeal thickening with enhancement along the right cavernous sinus. with reduction in caliber of the cavernous segment of the right internal carotid artery was noted. Following pulse methylprednisolone therapy, her headaches reduced and oral steroids were continued. Dose of desmopressin was modified and DI was controlled. Patient is on follow up and planned for immunotherapy if follow up MRI does not show regression of the inflammation. Conclusion: Autoimmune hypophysitis is very rare in children and adolescents and must be Considered as a differential diagnosis for pituitary lesions. When identified AH must be evaluated and treated aggressively with steroids, surgery and hormonal Supplementation as required. Close follow-up is necessary to detect tumor recurrence and to provide a stable hormonal milieu. Immunomodulating agents like rituximab and methotrexate, may be considered for recurrent and steroid unresponsive lesions.

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Title: A retrospective review of cases of paediatric head injuries at a tertiary care centre in south-western Rajasthan.

Dr. VIBHU SHANKAR PARASHAR*

Co-authors – Tarun Gupta, Gaurav Jaiswal, Pavan Kumar, Ashok Kumar

Abstract: Aims and Objectives: Brain injury is a leading cause of death and disability among children and adolescents. Pediatric head injuries are critically important because of the risk of high mortality. We aim to describe the epidemiologic characteristics, mechanism of injury, clinical presentation, and outcomes of pediatric traumatic brain injury and analyze the characteristics and determinants of outcome that could help to make preventive policies to improve their care. Material and Methods: We conducted a retrospective study of patients of ≤18 years of age who presented with head injury and admitted in neurointensive care unit at our center from September 2016 to September 2017. We further analyzed various factors including clinical factors (age, sex, prior medical conditions), type of injury, mode of injury, Glasgow coma score at admission, and mortality rate. Results: The study population comprised of 84 injured pediatric patients. Mean age was 9.2 years. 38.1% of patients were within 1–5-year age group. The male-to-female ratio was 2.1 to 1. The most common cause for trauma were falls and traffic accidents. The percentage of patients with mild, moderate, and severe head injury were 38.1%, 47.6%, and 14.3% respectively. Mortality in head injury patients was 20%. Operative intervention was done in 18% of patients. Predictors of mortality included young age, severity of head injury, the presence of early hypotension, and deranged coagulation parameters. Conclusions: This study describes that there is increased burden of pediatric brain injury patients and a critical need for effective fall and traffic accidents prevention strategies for children, and we should give attention to the predicting factors for more effective care of such patients. Keywords: Trauma, Brain injury, Pediatric age group, epidemiology, mortality.
Title: DELAYED PRESENTATION OF TETHERED CORD: DETETHERING IN CHILDHOOD AND ADOLESCENT AGE AND IT’S OUTCOME

Dr. Uday Goutam Nookathota*

Co-authors – Dr Prakash Rao Gollapudi, Dr Karla Ravi, Dr N Prathap Kumar

Abstract: DELAYED PRESENTATION OF TETHERED CORD: DETETHERING IN CHILDHOOD AND ADOLESCENT AGE AND IT’S OUTCOME AIMS AND OBJECTIVES: Tethered cord syndrome signifies a pathologic fixation of the spinal cord in an abnormally low position, undergoes mechanical stretching, distortion, and ischemia. It could be primary as in the case of spinal dysraphism, or secondary, following repair of the myelomeningocele. Clinically it manifests itself by progressive neurological, urological, and orthopedic signs and symptoms. Many studies have reported an improvement of urodynamic, and clinical variables after untethering procedure. However, other studies have raised suspicion about the usefulness of such a treatment in adolescents and adults. The current study is designed to assess the urodynamic abnormalities and urinary symptoms in paediatric and adolescent patients with tethered cord, who have undergone detethering of the spinal cord. The goal of surgery is to untether the spinal cord and to avoid incurring further neurologic deficit. Shorter the duration of symptoms, better the prognosis. MATERIALS AND METHODS: We analyzed 8 paediatric patients by history taking and physical examination. Renal and bladder ultrasounds were routinely performed. MRI of whole spine was performed. Urodynamic studies were performed pre and post operatively in all patients. All patients were subjected to detethering of the cord. Two patients were underwent revision surgery and improved later on. All patients were followed upto 2 years RESULTS: In this study we analyzed 8 patients. The mean age at presentation was 9.6 ± 6 years. Nocturnal and diurnal enuresis was found in 6 patients. Urinary tract infections were present in all patients. Hydronephrosis with renal involvement secondary to reflux noted in 2 patients. Fecal incontinence was observed in none. Motor weakness and some orthopedic deformity observed in some patients. Mean duration of presentation of urinary dysfunction was 1.6 ± 4 years. Significant bladder improvement was observed in all patients post operatively. Frequency of UTI was reduced, mean bladder capacity was improved, and basal detrusor pressure was lowered in all patients of detethering. Motor weakness and orthopedic deformity was improved. CONCLUSION Tethered cord represents most common etiology of neurogenic bladder dysfunction in children. Detethering of the cord has a positive impact on postoperative urinary function even in delayed presentation. Improvements were noted in detrusor function, EMG recordings, and pressures.

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Title: Supratentorial Ependymomas: single institute experience of 3 years

Dr. Meher thej Boorgula*

Co-authors – Dr Ramesh Doddamani, Dr dattaraj Sawarkar, Prof A.K. Mahapatra, Prof S.S.Kale

Abstract: Supratentorial Ependymomas: single institute experience of 3 years. Boorgula Meher Thej, Ramesh Doddamani, Dattaraja Sawarkar, A.K Mahapatra, S.S.Kale, Introduction: Intracranial ependymomas are the third most common primary brain tumors in children, usually located in the posterior fossa. Supratentorial location for Ependymomas are rare. It is suggested that they are distinct entities with different biological and clinical behaviors. In this study we describe our experience at AIIMS in the last 3 years. Materials and Methods: Retrospective analysis of 3 year data for cases of Paediatric supratentorial ependymomas was done. The data for immunologic markers, WHO grades, Level of resection and Progression free Survival was collected and compared with the standard data available for posterior fossa ependymomas. Results: There were a total of 8 cases of paediatric supratentorial Ependymomas, male- 5 and female - 3. The follow up period was 1-3 yrs. The tumour was Anaplastic WHO grade III in all the cases. GTE was done in 5, NTE in 3 and all the patients received adjuvant radiotherapy. There was recurrence in 3 patients- recurring twice in 2 patients. The biopsy for recurrent tumour also was Anaplastic ependymoma WHO grade III. The immunological markers were positive for EMA (75%), EBP 50 (75%), GFAP(50%) and negative for RELA. Conclusion: Supratentorial ependymomas are rare entities with a higher WHO grade, distinct immunological profile compared to posterior fossa ependymomas. Gross total excision is more feasible but the risk of recurrence is also high.

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Title: Is Venticulo-subgaleal shunting a reasonable temporising procedure?

Dr. Ticini Joseph *

Co-authors – Dr. Suhas Udayakumaran, Vishal Abhijit

Abstract: Is Venticulo-subgaleal shunting a reasonable temporising procedure? Aims and objectives: To analyse benefit of doing a temporising and minor procedure in preterm and in low birth weight infants due to various etiologies and weigh its benefits against a major procedure and under went VSG at Amrita Institute of Neurosciences, by various surgeons, from 2009 to August 2017 were included in the study. The indications for VSG were varied the complications that arose as a result of VSG were analysed. The advantage in terms of age and weight gain were studied. The complications that arose after shunting were also noted and the total no of procedures and in the first months of life were plotted in a graph. Results and discussion: It not only helped tide over the early fragile period of the child by preventing a major procedure but also helped in cases were shunting was not possible due to infection. Almost 20% VSG develop a complication in the form of malfunction (~8%) shunt infection (~6%) and CSF leak which necessitated another procedure and early shunting. VSG was found to be a useful procedure in cases with active infection and was also seen to obviate the need for a permanent implant in 2 cases. 44% of cases required more than just two procedures. In 24% of patients VSG might only have added another procedure as they had to be shunted within a month without a great in weight. Conclusions: VSG buys time before doing a more major procedure and also gives a chance to analyse the need for a permanent CSF diversion procedure. However the chances of failure and complications were high even after VSG and it may actually increase the morbidity due to the number of procedures.

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Title: Role of Immediate post operative Flow void in predicting ETV failure

Dr. Ticini Joseph *

Co-authors – Dr. Suhas Udayakumaran

Abstract: Despite a technically successful ETV some patients fail the procedure post operatively due to unsatisfactory flow dynamics which does not produce the expected CSF diversion. Aims and objectives: To identify patients who might fail in the immediate post operative period despite a technically successful ETV. To reduce the morbidity associated with unexpected failure of ETV Closely follow-up of patients who have higher chances of failure and thus possibly detect and intervene earlier when signs of failure appear Identify patients who can be managed conservatively under supervision in the event of complications like wound leak. Materials and methods: All patients operated at Amrita Institute of Sciences by a single surgeon from March 2011 to August 2017, who have an early post operative imaging and a follow-up of atleast 3 months. The post operative T2 images were analyzed for flow void which if present was considered positive. Success was defined as the non-requirement of shunting procedure within 3 months of ETV and conversely failure was defined as the requirement for shunt surgery within 3 months. The analysis was carried out separately between the different age groups and between different etiologies. The sensitivity, specificity, positive and negative predictive values were determined in each group. Results and Discussion: A total of 65 patients were included in the study. Of these, 10 required a shunting procedure within 3 months of ETV. 4 of these patients did not have a flow void in the post operative scan while 6 had a flow void. 2 patients had a successful outcome even with a negative flow void. The post operative flow void was found to be a good predictor of a successful outcome especially in non infective and non hemorrhagic HCP and in the older age group. Despite a technically successful ETV some patients fail the procedure post operatively due to unsatisfactory flow dynamics which does not produce the expected CSF diversion. Aims and objectives: To identify patients who might fail in the immediate post operative period despite a technically successful ETV. To reduce the morbidity associated with unexpected failure of ETV Closely follow-up of patients who have higher chances of failure and thus possibly detect and intervene earlier when signs of failure appear Identify patients who can be managed conservatively under supervision in the event of complications like wound leak. Materials and methods: All patients operated at Amrita Institute of Sciences by a single surgeon from March 2011 to August 2017, who have an early post operative imaging and a follow-up of atleast 3 months. The post operative T2 images were analyzed for flow void which if present was considered positive. Success was defined as the non-requirement of shunting procedure within 3 months of ETV and conversely failure was defined as the requirement for shunt surgery within 3 months. The analysis was carried out separately between the different age groups and between different etiologies. The sensitivity, specificity, positive and negative predictive values were determined in each group. Results and Discussion: A total of 65 patients were included in the study. Of these, 10 required a shunting procedure within 3 months of ETV. 4 of these patients did not have a flow void in the post operative scan while 6 had a flow void. 2 patients had a successful outcome even with a negative flow void. The post operative flow void was found to be a good predictor of a successful outcome especially in non infective and non hemorrhagic HCP and in the older age group.
Paper Id: PNSP078

Title: CRANIOSYNOSTOSIS- AN EPIDEMIOLOGICAL STUDY IN A TERTIARY CARE INSTITUTE

Dr. Dhanasekar Ayyavoo*

Co-authors – Prof. Dr. Ragavendran

Abstract: Aim: To study the epidemiology, common types, treatment and prognosis of craniosynostosis in 12 cases presented in RGGGH, Chennai between Aug 2015- Aug 2017. Materials and methods: 12 cases who were admitted in RGGGH between Aug 2015 and Aug 2017 with the diagnosis of craniosynostosis were studied. Their demographics were documented, followed up and treatment and prognosis recorded. The data was analysed using SPSS Results: 7 male and 5 female children were studied. Commonly involves coronal suture. Strip craniectomy with or without frontal advancement was the commonest surgical procedure. Post-operatively all the patients had good cosmetic results Conclusion: Early identification and corrective surgery for craniosynostosis is imperative to prevent potential long term complications and sequelae. Keywords: craniosynostosis, strip craniectomy.

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Paper Id: PNSP079

Title: Long segment cervicothoracic split cord malformation - a case report

Dr. AGNETIA VINOTH*

Co-authors – Prof. Dr. Lakshmipathy Mch, Dr. Selvaraj Mch

Abstract: Introduction Spinal cord Malformation is a form of spinal dysraphism in which any or all of the spinal cord, cauda equina, and filum terminale are divided by a bony or fibrous spur. There are two described types of SCM, namely Types I and II. SCMs associated with a split of the spinal column, spinal bony spurs, myeloeceles, myelomeningoceles, lipomas, and dermal sinuses have been reported in the literature. SCMs are often located in the lumbar and thoracolumbar regions. We report a rare case of cervicothoracic SCM with spina bifida with scoliosis Case report 4 years male boy presented with complaint of progressive lateral bending of back for the past 1 year without any history of pain or trauma and with out any motor, sensory and bladder bowel symptoms. Child was born to elderly nonconsanguous mother and the pregnancy was not booked and no proper folic acid supplementation. Mode of delivery was LSCS with low birth weight and birth asphyxia. Clinical examination showed normal mentation appropriate to the age and no motor and sensory deficit except scoliosis. CT spine showed failure of fusion of posterior element seen at C4, C5, C6 and D10, D11, D12. Multiple segmentation anomalies seen in C7 and D1. Hemivertebra seen at D2, D3. butterfly vertebra seen at D4, D5. Bifid spinous process seen in D6, D7, D8, D9. Scoliosis of upper dorsal spine concavity to left with primary curve from D3 TO D6 and secondary curve from D7 TO L1. primary curve kobbs angle 15 and secondary curve kobbs angle 20 degree. MRI spine showed split spinal cord for C7 to D12 and cord ends at D12. No bony septa. Child was taken up for surgery with the midline cervico dorsal incision and posterior spinal column was opened from C7 to D2 level, fibrous septum was excised and detethering was done. Post operative period was uneventful. No neurological deficit and discharged on 7 th POD and child is on follow up. Discussion SCM is an uncommon congenital anomaly in which a segment of the spinal cord is divided into
two parts by a fibrous or rigid bony spur. These two hemicords may be separated by a bony/osseo-cartilagenous spur and be contained in separate dural sheaths (SCM type I) or they may be separated by a fibrous spur and contained in a single dural sheath (SCM type II). The unified theory of embryogenesis proposes that all variant types of SCMs have a common embryogenetic mechanism. Basic to this mechanism is the formation of adhesions between ecto- and endoderm, leading to an accessory neureneric canal around which condenses an endomesenchymal tract that bisects the developing notochord and causes formation of two hemineural plates. SCMs can present with a myriad of clinical manifestations. These can range from asymptomatic ones to pain, gait disturbance, motor or sensory deficits, and autonomic dysfunction. SCMs are often located in the lumbar and thoracolumbar regions. Sinha et al. reported the incidence rates for cervical and cervicothoracic locations as 3% and 1%, respectively. In our case split cord was seen in cervicothoracic level which is considered as rare in presentation. Another important finding was long segment of split cord (C7 to D12), usually the two hemicords reunite caudally to the split, but in our case the split did not reunite and represents the true duplication of the spinal cord. Conclusion We presented this case because the split cord malformation is the rare spinal dysraphism among this long segment cervicothoracic variety is very rare in occurrence. Key words: split cord malformation, spinal dysraphism.

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Paper Id: PNSP081

Title: Role of intraoperative monitoring in surgery for tethered cord

Prof. Suhas Udayakumaran*

Co-authors – Chetan Rathod

Abstract: OBJECTIVE: To evaluate the significance of intraoperative monitoring in surgery for tethered cord in relation to outcome. MATERIAL-METHODS: The study was prospectively done in the Division of Paediatric Neurosurgery, AIMS, Kochi, India. 150 patients who are diagnosed with spinal dysraphism and operated and intraoperatively electrophysiologically monitored were included. Their preoperative neurological, urological and orthopedic status compared with post-operative status clinically. Informed consent was taken from all the patient. The duration of study was from from march 2013 to march 2017. Intraoperative monitoring (SSEP, MEP, and Direct stimulation) was done with XELTEK PROTEKTOR 32 IOM System, NATUS NEUROLOGY/MEDICAL INC. Middleton, USA. All statistical analysis was done with IBM SPSS version 19. For finding association with categorical variables Pearson Chi-square test was used. RESULTS: The following significant observations were made: Out of 150, revision surgeries were for 18, Male:Female = 1:1.6 o Preoperatively, 36% had motor deficit, 64% had normal bladder function, 30% had abnormal bowel function and 38% had orthopedic deformity, 96% had regular follow up. Follow up ranged from 1 month to 6 years. Mean of 2.2 years. During immediate post-operative period 89% had preserved motor function, while 81% had preserved bladder function, 94% had bowel function preserved. On follow up no patient had any motor function deterioration, 1 patient had bladder function deterioration and 1 patient had bowel function deterioration. Sensitivity of IOM in predicting new neurological deficit was 95.4%. Specificity of IOM in predicting new neurological deficit was 66.7%. Positive predictive value was 97.7%. Negative predictive value was 50%. Diagnostic accuracy was 93.6% CONCLUSIONS: • Intraoperative monitoring is sensitive in
diagnosing any neural injury during spinal dysraphism surgery, but are not very specific. • IOM has a good
diagnostic accuracy • Postoperative motor and urological outcome was significant.

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Paper Id: PNSP083

Title: CADAVERIC STUDY ON THE VARIATIONS IN THE NORMAL COURSE OF MOTOR BRANCHES OF MUSCULOCUTANEOUS, MEDIAN AND ULNAR NERVES (SUPPLYING ELBOW FLEXORS, FOREARM PRONATORS AND WRIST FLEXORS RESPECTIVELY) Prof. Suhas Udayakumaran*

Co-authors – Dr. A. K. Purohit, Dr. Dheeraj J., Dr. Sudhakara D.

Abstract: CADAVERIC STUDY ON THE VARIATIONS IN THE NORMAL COURSE OF MOTOR BRANCHES OF MUSCULOCUTANEOUS, MEDIAN AND ULNAR NERVES (SUPPLYING ELBOW FLEXORS, FOREARM PRONATORS AND WRIST FLEXORS RESPECTIVELY) Abstract Objective: To evolve precise skin incisions and define full course of the motor branches to elbow flexors, forearm pronators and wrist flexors so as to facilitate greater efficacy during therapeutic applications in cerebral palsy. Materials and Methods: The motor branches to the elbow flexors, forearm pronators and wrist flexors from the musculocutaneous (MCN), median (MN) and ulnar (UN) nerves respectively were dissected in 30 cadaveric upper limbs. The invisible intra-truncal branch (ITB) point and muscular entry point (MEP) for each motor nerve was identified and distance from a bony landmark was measured. Results: The MCN followed the classical course when present (absent in 1 limb) and the mean distance from acromion process to the invisible ITB point and MEP of the motor branch to BB was 101 + 29 mm and 135 + 37 mm and that of BR muscle was 154 + 39 mm and 196 + 42 mm. The MN and UN were present in all limbs and the mean distance from IEL to the invisible ITB point and MEP of the motor branch to PT was -21 + 16 mm and 24 + 12 mm, FCR was 17 + 29 mm and 56 + 27 mm, FDS was 31 + 33 mm and 68 + 32 mm, PQ was 15 + 20 mm and 113 + 32 mm, FCU was 3 + 10 mm and 21 + 11 mm and that of FDP was 28 + 8 and 21 + 11 respectively. The variations encountered during the dissection of these nerves are described in the Conclusion: The motor branches of the MCN, MN and the UN supplying the elbow flexors, forearm pronators and wrist flexors do not follow a fixed pattern and show variations in the number, patterns and the level of branching. Intra operative stimulation of the motor branches is mandatory. We suggest the following incisions for SMF of the MCN, MN and UN: a) Approximately 6 cms vertical incision in the groove between biceps and brachialis muscles starting 10 cms distal to acromion process, b) Hockey stick shape incision starting about 2 cms above IEL on the lateral aspect of the bulk of biceps and ending about 3 cms below IEL with a curve around the IEL. Key words: Median nerve, Musculocutaneous nerve, Selective Motor Fasciculotomy, Ulnar nerve.

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Title: Hemorrhagic presentation of intracranial pilocytic astrocytomas: literature review

Dr. Raghav Pargaonkar*

Co-authors – Dr. Lakshmiprasad G, Prof Menon G

Abstract: Pilocytic astrocytomas (PAs) are seemingly innocuous and benign tumors. However, in recent times, many case series have documented high rates of hemorrhage in these neoplasms. We hereby provide a detailed analysis on hemorrhagic pilocytic astrocytomas (HPA) in adults and report one such case managed at our institute. In addition, salient differences between adult and pediatric hemorrhagic PA have been briefed. Material & Methods Hospital records were retrieved for our case. Literature review was conducted by searching online databases for the following keywords—pilocytic astrocytoma, hemorrhage, cranial, pediatric, and adults. Results & Discussion A 22-year-old male with neurofibromatosis-1 presented with sudden onset headache and vomiting of 3-day duration. Imaging revealed a lobulated suprasellar lesion with obstructive hydrocephalus. Pterional transsylvian approach and subtotal resection were performed. Histopathology showed features of PA with bleed. Including current report, a total of 26 cases have been reported. Mean age was 37 years (21–75 years) and they are mostly found in the third decade. The male:female ratio was 2.1:1. Sudden headache with vomiting was the most common symptoms. Tumors were mostly located in cerebral hemispheres (n = 9/34.6%), hypothalamus/ suprasellar region (n = 7/27%), and cerebellum (n = 6/ 23%). Two-thirds underwent gross total excision. There were two deaths and except one case, no recurrences were reported in those with available follow-ups. Conclusion Hemorrhagic presentation of a PA is rare, although more commonly seen in adults and most commonly located in cerebral hemispheres. Maximal safe resection is the standard treatment and recurrences are rare.

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Title: Ruptured Encephalocele In Neonatal Period

Dr. Souvik Singha*

Co-authors – Dr. Dwarakanath Srinivas, Dr. Souvik Singha,

Abstract: History: 11 days old male child presented with complaints of swelling over the back of head since birth with yellowish discharge. Child was born at 39 weeks of gestation through elective LSCS without any other significant perinatal complications. However there was history of inadequate Folate Intake during pregnancy.

On Examination:

General Condition: Fair, Vitals: Stable, Neurological Examination: Crying, Consolable, Moving all four limbs equally against gravity. Developmental milestones: Could not be assessed. Other Systemic examination: Unremarkable. Local examination: A Soft globular lobulated swelling of measuring 3X 5 X 4 cm
was palpable on the Occipital region, which enlarges in size during period of straining and reduces partially at rest, with necrosed overlying skin with active pus mixed CSF discharge.

**Investigations:**

**CBC:** Hb: 15 gm%, WBC: 6,000/uL, Platelet: 2.11 lakhs/uL

**Biochemistry:** Urea: 55.40 mg/dl, Creatinine: 0.82 mg/dl, Bilirubin: 4.63 mg/dl, Ser. Sodium: 137.88 mmol/L, Ser. Potassium: 5.89 mmol/L, Ser. Chloride: 107.80 mmol/L, GRBS: 63 mg/dl

**MRI:** 7.3 mm defect was noted in occipital bone at level of lambdoid suture in the midline. A swelling of size 2.4 X 3.8 X 3.7 cm was noted with herniation of dysplastic cerebral parenchyma into the swelling and incorporation of torcula, part of straight sinus and tentorium. The splenium was stretched posteriorly with presence of any hydrocephalus. The posterior fossa was noted to be small with inferior descent of vermis and effaced fourth ventricle with bilateral stretching of Occipital horns. Features were suggestive of Occipital encephalocele with incorporation of torcula in it and Inferior descent of Vermis with small Posterior Fossa with concomitant Chiari –III malformation.

**Treatment:** Baby underwent Excision and repair of encephalocele on 11th day of life.

**Discussion:**

Patient tolerated the procedure well and recovered from anaesthesia. Patient was managed with Antibiotics and supportive medications in ICU care. Post-op wound healed well.

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**Paper Id:** PNSP094

**Title:** Fusion for cervical spine instability in pediatric patients with atlanto axial dislocation : An institutional experience

**Dr. SANJEV SREENIVASAN A**

**Abstract:** Fusion for cervical spine instability in pediatric patients with atlanto axial dislocation : An institutional experience

**Introduction**

The cervical spine is the most mobile segment of the spinal column and hence is most prone to injury after trauma or falls. These patients may present with neck pain, with or without neurological deficits. Bladder or bowel involvement may be variable at the onset of illness. There are various approaches and procedures described for the correction of post traumatic Atlanto axial dislocation in these patients.

**Methodology**

This is a retrospective review of all patients operated upon for post traumatic AAD, from year 2012 to year 2016 at our institute. We tabulated all the available data from the discharge summaries and operation and admission records and analysed the outcome of the various surgical methods used.

**Results**
A total of 11 patients were operated at our institute from Jan 2012 to Dec 2016. Five patients were operated by anterior approach (trans oral odointoidectomy done) and 11 (7 posterior fixations and 4 DCERs done) by posterior approach. Clinical improvement following primary surgery was seen in all patients. Two patients who underwent DCER, developed residual canal compromise at follow up evaluation and were considered for Transoral odointoidectomy. One patient who underwent trans oral decompression and posterior fixation developed recurrent neurological deficits and was a candidate for DCER in the second sitting.

Conclusion

Surgical intervention produced immediate improvement in all the patients with traumatic atlanto axial dislocation. Residual neurological compromise rates following DCER were high and needed a second procedure. A standard Transoral decompression and Posterior fixation met with recurrence rate lesser than DCER.

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Paper Id: PNSP095

Title: RUPTURED ENCEPHALOCELE IN NEONATAL PERIOD

Dr. Souvik Singha*

Co-authors- Dr. Dwarakanath Srinivas, Dr. Manish Beniwal, Dr. Prateek

Abstract: **Introduction:**

Encephalocele is an embryological mesodermal anomaly resulting in a defect in the calvarium and dura associated with herniation of meninges, cerebrospinal fluid (CSF), and/or brain tissues through a defect that is usually covered by the scalp which may be complicated by stretching of the overlying skin, ulceration, and rupture, the incidence being 1 per 5,000 live births with preponderance of females over males.

**Aims & Objectives:**

To report a case of ruptured neonatal encephalocele necessitating adequate pre-operative planning and peri-operative neonatal care.

**Case:**

A 4 days’ old male child presented with complaints of swelling over the back of head since birth with yellowish discharge. Child was born at 39 weeks of gestation through elective LSCS without any other significant perinatal complications. There was history of inadequate Folate Intake during pregnancy. Examination revealed a Soft globular lobulated swelling of measuring 3 x 5 x 4 cm in Occipital region, which enlarged in size during period of straining and reduced partially at rest, with overlying skin necrosis and active pus mixed CSF discharge.

Pre-operative haematological and biochemical parameters were within normal limits. MRI with MRV revealed 7.3 mm defect in occipital bone at level of lambdoid suture in the midline with a swelling measuring 2.4 x 3.8 x 3.7 cm with herniation of dysplastic cerebral parenchyma into the swelling and incorporation of torcula, part of straight sinus and tentorium. The splenium was stretched posteriorly without presence of any hydrocephalus. The posterior fossa was noted to be small with inferior descent of vermis and effaced
fourth ventricle with bilateral stretching of Occipital horns. Features were suggestive of Occipital encephalocele with incorporation of torcula and Inferior descent of Vermis with small Posterior Fossa.

Baby was sent to neonatologist for stabilisation and underwent Excision and repair of encephalocele on 11th day of life. The patient was operated upon in the prone position, and care was taken to maintain the fluid and electrolytes balance and normothermia. A large C-shaped flap was raised for adequate skin cover. Bony defect was identified. Torcula was located medial and inferior in to the opening of the encephalocele. Part of the torcula was incorporated within the encephalocele and was preserved. The herniating brain matter was gliotic which was excised. Water-tight Dural repair was done with on-lay patch and fibrin-glue. Skin was closed in layers. He tolerated the surgery well and managed with post-op ICU care. Recovery was uneventful except for seizures on post-op day 1 which was controlled with Levetiracetam. Follow up clinical examination at 2 weeks and 3 months showed adequate skin cover with satisfactory wound healing without any further complications.

**Background:**

The defect of encephalocele arises after primary neurulation which takes place between 3rd and 4th gestational weeks. Embryologically it is an error in mesodermal differentiation where the paraxial mesoderm migrates between ectodermal layers. In case of encephalocele formation, a neuroschisis develops after primary neurulation which leads to scarring and subsequent adhesion between the cutaneous and the neuroectoderm and prevents interposition of the mesoderm. Occipital encephalocele, more common than anterior encephalocele, is usually found in the midline between the lambda and foramen magnum. However, the bony defect can be variable i.e. limited to occipital bone or involving the posterior lip of foramen magnum, or reaching up to the posterior arch of the atlas, accordingly can be sub-divided into supratorcular and infratorcular types. Cortical dysplasia and corpus callosum agenesis may be associated findings. Posterior encephalocele may be complicated with hydrocephalous in 60% cases. It might contain occipital lobe, cerebellum, brainstem, or, rarely, torcula. If it contains torcula there might be associated risk of injury to cerebral deep venous system thrombosis. Coexistent hydrocephalus may occur due to torsion of the aqueduct of Sylvius or aqueduct stenosis. Hydrocephalus may also occur after excision of the encephalocele due to changes in the CSF dynamics. Identification of the content with MRI and MRV aids in proper surgical planning and reducing complications as the brainstem and torcula may be present as sac contents rarely. During surgery, careful dissection and preservation of torcula and venous structures is crucial for optimum outcomes. Dural defect can be repaired by using the pericranium as a graft, two-layered watertight closure of the dura is better as dura mater is osteogenic, which helps in significant bone growth, which can eliminate or reduce the size of bone defect. Post-op hydrocephalus may need shunt surgery.

**Conclusion:**

Ruptured Encephalocele in neonatal period. with torcula as one of the contents along with achieving adequate skin covering over the defect and risk of post-op leak possess great surgical challenges. However, proper pre-operative evaluation with MRI and MRV clearly demonstrating the contents, skin flap planning, careful management during surgery and adequate post-op care can improve subsequent outcome.

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Paper Id: PNSP100

Title: Management of Plagiocephaly, our experience.

Dr Chandrasekhar Y.B.V.K.*

Co-authors- Dr Manas Panigrahi, Dr Hemanth kumar

Abstract: The meaning of Plagiocephaly is an oblique or slant head. It is one of the common craniofacial deformities which can be due to an isolated craniosynostosis or due to an external deforming force.

Study design: We retrospectively analysed 6 pts from June 2016 to July 2017. All surgeries were performed along with our plastic surgeon as a team effort.

Materials and methods: Age of the patients ranged from 7 months to 6 yrs in our series. There were equal male and female patients. Duration of the hospital stay ranged from 3 days to 18 days. Presurgical evaluation was performed with a 3D CT Scan and osteotomy planned on a 3D skull model. We have used absorbable plate and screws in all our patients. We have no mortality or morbidity in our series.

Conclusion: Plagiocephaly is a treatable condition and good outcomes are achieved if treated early. Team effort and good preoperative planning is important in achieving good results.

Key words: Craniosynostosis, Plagiocephaly.

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Paper Id: PNSP101

Title: Frameless neuronavigation combined with neuroendoscopy in management of multiloculated hydrocephalus.

Dr S Ramesh.*

Co-authors- Dr Subodh Raju

Abstract: Management of Multi loculated hydrocephalus is challenging. Neuroendoscopy has been well established when compared to traditional multiple shunt placement in management of multiloculated hydrocephalus. Main aim of neuroendoscopy is to convert multiple locules into single locule and do CSF diversion procedure either third ventriculostomy or ventriculo peritoneal shunt. Neuroendoscopy avoids multiple shunt placement and need for revision of shunt. Neuroendoscopy when combined with frameless neuronavigation is reliable, accurate, and extremely useful in maintaining orientation and localizing the appropriate fenestration site in multiloculated hydrocephalus where anatomical landmarks are grossly distorted. We present 8 cases of multi loculated hydrocephalus which were managed neuroendoscopy combined with frameless neuronavigation. 7 patients didn't require further CSF diversionary procedures at 6 months follow up and 1 child had further septations in follow up scan with single cyst enlargement for which redo procedure was done.

Conclusions: Neuroendoscopy combined with frameless neuronavigation improved the accuracy of endoscopic approach. In multi loculated hydrocephalus neuroendoscopy with navigation helps in orientation within cavities and appropriate site for fenestration.

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Paper Id: PNSP102

Title: Intraoperative Guidance in Brain stem tumor surgery

Dr Vishakha Patil.*

Co-authors- Dr Subodh Raju

Abstract: Introduction - As brainstem is a small and complex structure with variety of critical neural structures, surgery for brain stem tumors carries great risk of iatrogenic brain stem injury intraoperatively leading to postoperative neurological deficits and morbidity. Hence judicious approach is needed with use of Intraoperative guidance for identification of safe entry zone and for guiding extent of resection. Intraoperative guidance techniques include Image guidance (Neuronavigation), Intraoperative neuromonitoring, Fluorescence microscopy, and Intraoperative real time imaging modalities. Each modality used alone has limitations and lacks desired accuracy.

Objective – To evaluate efficacy of intraoperative guidance techniques including neuronavigation, intraoperative neuromonitoring, Fluorescence microscopy combinely in brain stem tumor surgery
Material and Methods – Three pediatric patients (4, 5, 8 years) with brain stem tumors (pontine, pontomedullary, and midbrain tumors respectively) were operated from Nov 2016 – Nov 2017 at our hospital under intraoperative guidance with neuronavigation (Medtronic StealthStation), Fluorescence microscopy using using Zeiss Pentero 900 Yellow 560 filter and intraoperative electrophysiological neuromonitoring (Medtronic NIM Eclipse) with Cranial nerve-evoked potentials (EPs), BAEPs, MEP, SSEP, EMG, and brainstem mapping BSM.

Results – Neuronavigation was useful in deciding the safe trajectory and approach to the tumor (infratentorial supracerebellar in 2 patients, Midline suboccipital telovelar approach in one patient), which also aided to locate tumor precisely intraoperatively. As in all 3 cases, tumor showed contrast enhancement on MRI, hence Fluorescein uptake intraoperatively was further helpful for locating lesions with more accuracy and in monitoring the extent of resection. Continuous intraoperative neuromonitoring showed no changes in MEP, SSEP till the end of resection of tumors in 2 cases, where as in one patient MEP started dropping, hence further resection of tumor was stopped. Only in this patient power in opposite limbs deteriorated postoperatively which recovered over 6 weeks.

Conclusions – Neuronavigation helps in deciding the safe trajectory and approach to the tumor, also in localizing the tumor intraoperatively. The limited accuracy of neuronavigation because of brain shift can be improved with fluorescence microscopy, which also aids in monitoring the extent of resection. The functional mapping and monitoring with intraoperative electrophysiological monitoring further helps to decide safe entry zone for tumor resection and also determines the extent of safe resection of tumor reducing the neurodeficits and morbidity in postoperative period, preserving better quality of life.

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Paper Id: PNSP103

Title: Endoscopic resection of intraventricular tumors using NICO Myriad

Aaron Mohanty. *

Abstract: Tumors in intraventricular and paraventricular locations are often difficult to reach by conventional microsurgical approaches. The location of the tumors in the intraventricular compartment and associated hydrocephalus makes them suitable for endoscopic procedures. However, lack of a rapid debulking tool which can be passed along the endoscope’s instrument channel and can simultaneously achieve hemostasis have been the predominant reason of limitation of endoscopes in intracranial tumors to biopsies.

The NICO Myriad is a side cutting tumor debulking system which uses a combination of suction and reciprocating cutting action to fragment and aspirate the tissue. The system is currently compatible with several currently available endoscopes. The suction draws the desired tissue into the side aperture while the reciprocating cutting action of the inner cannula resects the tissue. Unlike the laser and ultrasonic devices, the NICO system is non-thermogenic. In the current presentation, we illustrate use the NICO Myriad to resect intraventricular tumors through a Gaab rigid endoscope.

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Title: ENDOSCOPY IN THE FIRST YEAR OF LIFE: CONTROVERSIES.

Dr. Artur Da Cunha.*

Co-authors- Serra, Suzana

Abstract: INTRODUCTION: The management of hydrocephalus in the first year of life is still a demanding situation for the paediatric neurosurgeon. The great vulnerability of infant compromises the results. The “minor CSF pathway” in this age group is one of the important reasons for the failure of the endoscopic third ventricle-cisternostomy (ETV). The shunt-implantation is still the most common treatment, but the frequent and serious complications are well known. Despite the many controversies, the endoscopic alternative in patients under two years of age has shown good results in some cases, with the best success in hydrocephalus associated with aqueduct stenosis (SA).

METHODS: We reviewed the literature about neuroendoscopic management of hydrocephalus in the first year of life and present our experience of 26 cases operated on between the ages of 28 days and 11 months. Seven patients were premature infants who developed hydrocephalus associated with intraventricular haemorrhage (IVH) grade III/IV. Sixteen patients presented SA and three more cases developed a unilateral ventricular hydrocephalus associated with obstruction of the foramen of Monro (OFM). In the IVH cases were held brainwashing, coagulation of the choroid plexus and ETV. Only ETV was used in the SA and septostomy and ETV in the OFM patients.

RESULTS: The successfully outcome without any other surgery was achieved in 3/7 (43%) IVH cases, in 9/16 (56%) of SA and 2/3 (67%) of OFM. The follow-up interval ranged from 7 – 78 months.

CONCLUSIONS: Despite the poor results ion our small sample, because of the high-risk of malfunction and infectious complications related to shunt, primary neuroendoscopy management may be considered a treatment of choice to avoid or delay the shunt implantation.

(*) Paediatric neurosurgeon, Hospital da Restauracao, Recife, Brazil.
Paper Id: PNSP105

Title: Craniopharyngioma – Conservative Management

*Dr Dhaval Shukla.*

Abstract: “Craniopharyngioma is a benign congenital tumor. What a depressing admission it is for a surgeon, therefore, to report that every single child with this condition treated in our clinic prior to 1950 is now dead.”

DD Matson, 1962

Despite high survival rates of craniopharyngioma, quality of life is frequently impaired in long-term survivors due to sequelae caused by the proximity of the tumor to the optic nerve and hypothalamopituitary axes. Though complete resection of craniopharyngiomas is desirable for lower recurrence rates, it is hindered by functional preservation. Risk-adapted surgical strategies at initial diagnosis of childhood craniopharyngioma should aim at a degree of resection, keenly focused on respecting the integrity of optical and hypothalamic structures to prevent severe sequelae and therein minimize consequences that could have a negative impact on patient quality of life. Local irradiation of residual tumor is efficient in preventing tumor progression. It is advisable to have a multidisciplinary team able to discuss diagnostic and treatment strategies, adopting the most sophisticated approaches feasible based on sufficient in-house surgical, radio-oncological, and socio-psychological experience for treating patients with childhood craniopharyngioma. Currently a trend towards less radical surgical approaches is observed. In the multicenter study of children and adolescents with craniopharyngioma, KRANIOPHARYNGEOM 2007, it was observed that the realized treatment was more radical (p=0.01) in patients recruited 2001-2007 (38%) when compared with patients treated 2007-2012 (18%). In spite of less radical resection in later cohort, 65% patients had hypothalamic lesions. Surgery for craniopharyngioma has a major negative impact on long-term quality of life (QoL). A recent literature review on quality-adjusted life years (QALYs) of four surgical approaches to craniopharyngiomas: aggressive tumor removal (attempt at gross-total resection (GTR)), planned subtotal removal (STR) plus radiotherapy, biopsy plus radiotherapy, and transnasal endoscopic resections were reviewed. The authors found highly significant differences between treatments, both on 5-year follow-up (F = 17,150, p < 0.001) and 10-year follow-up (F = 6,173, p < 0.001) and concluded that patients treated with biopsy plus radiotherapy have overall significantly more QALYs, both at 5- and 10-year follow-up (3.9 ± 0.2 and 7.8 ± 0.5, respectively). As biopsy and radiotherapy seems to be best option, innovative treatment strategies are warranted to improve QoL in these patients.
**Paper Id:** PNSP106

**Title:** MULTIMODAL TREATMENT OF CRANIOPHARYNGIOMAS

*Prof. Eduardo Jucá*

**Abstract:**

Introduction: Craniopharyngiomas are a very challenging tumoral entity, considered by Cushing the most defiant tumor a neurosurgeon could face. One of the two age peaks of incidence affects children, turning this disease a major matter of interest for pediatric neurosurgeons. Aim of this lecture is to demonstrate the multiple treatment possibilities for craniopharyngiomas. **Methods:** Report of a series of personal cases approached by different methods, extensive literature review and original research regarding molecular aspects of craniopharyngioma pathogenesis and aggressiveness. **Results / discussion:** Literature review shows multiple ways of management of craniopharyngiomas: from conservative behavior passing through radiation therapy and local chemotherapy into the cystic cavity until different possibilities of surgical approaches. Several personal cases show that the choice for the surgical approach depends on tumor’s specific characteristics, such as location, size and related anatomical structures. Original research has shown that Wnt genetic pathway is hyperexpressed in craniopharyngiomas, specially in the more aggressive ones. This reinforces the importance of a multidisciplinary team and the usage of multiple surgical and technological resources for optimal management. **Conclusions:** Unlike other types of tumors, craniopharyngiomas may be approached by multiple medical and surgical strategies, isolated or combined. Genetic features could also be used to better characterize individual cases in the future.

**Key words:** Craniopharyngioma, Surgery, Radiation therapy.
Paper Id: PNSP107

Title: NON-ACCIDENTAL HEAD INJURY IN CHILDREN:

Dr. Eylem Ocal

Abstract: Non-accidental injury (NAI) in children has been a controversial topic in pediatric neurosurgery. There are strong opinions in every aspect of the subject that also constitutes legal ramifications for the involved physician. The emphasis should be given to recognizing the NAI and report it appropriately to avoid devastating outcome for the child. It is also important to consider the cultural, socioeconomic, and psychological roots in our communities and to educate caregivers to prevent such occurrences.

The incidence, varies from community to community, region to region and amongst countries. The most affected age group is children under the age of 2 years. In most studies boys were found to be at a higher risk than girls. The perpetrator was the father in 37% cases in a study and it was the mother in only 12.6% cases. Low socio-economic status of the family and stress of the caregiver play major roles in NAI.

Presenting symptoms may be of a classic trauma but the history of the events is important. The best and most helpful history is the one that is taken at initial contact from the caregiver/parents. A detailed examination may provide further clues such as old bruises, abnormal patterns of injury. Seizures are more common in non-accidental head (NAHI), 69% vs 12.8% in accidental head injuries (AHI). Findings of mixed density subdural hematomas in imaging studies (67% NAHI vs 18% AHI), retinal hemorrhages (53-80% of NAHI vs 0-10% of AHI), additional skeletal and long bone injuries (up to 75% of the patients with NAHI) are important findings and should raise suspicion for further evaluation preferably by a child abuse expert pediatrician where one is available.

The treatment is no different than any other head injury. It depends on the severity of the injury. Surgery is indicated where there is significant mass effect due to bleeding such as an acute subdural or in cases of chronic subdural collections exerting signs of high intracranial pressure. Prevention of secondary insults such as due to hypoxia and seizures are extremely important and result in better outcomes. The outcome is good in 1/3 of the patients. Severe disability may occur in 33% of the patients. The rate of death was reported to be up to 19% in one study which was higher than accidental injuries.

NAHI is preventable with appropriate education and support of especially young parents. The cost of education is proven to be much less than treating a child with NAHI. Preventive services and appropriate authorities/specialized personnel to report should be established in institutions where feasible. The role of the neurosurgeons is not only to treat these children but is also to recognize the possibility of maltreatment, report it appropriately when suspected and be prepared to provide educated and honest clinical opinion if asked by legal authorities.

References:


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Paper Id: PNSP108

Title: Limited Dorsal Myeloschisis – an under recognized entity.

Dr. Kaushik Sil*

Co-authors- Sandip Chatterjee

Abstract: Limited Dorsal Myeloschisis is a form of closed spinal dysraphism characterized by a small but constant cutaneous “open” defect and a fibroneural stalk with a dural sheath extending from it to the cord. It is a primary neurulation defect affecting neuro-cutaneous dysjunction. The cutaneous lesions are either saccular akin to meningomyelocele sac or a pit like a dermal sinus – many times with neurocutaneous markers like hairs and hemangioma. The difference with meningomyelocele is that the placode is almost closed thus “limiting” the myeloschisis. The tethering effect due to the fibroneural stalk is seen as dorsal tethering of the dura and or the cord.

We present our experience of 11 cases of LDM at our institution, many of whom have been previously operated with a misdiagnosis of meningomyelocele, dermal sinus and spinal lipoma. They presented with symptoms of retethering due to inadequate excision of the fibroneural stalk. Surgery and excision of the stalk relieves the symptoms in all.

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Title: Pathology of Brainstem Tumors

Dr Megha Uppin*

Abstract: The classification of pediatric CNS tumors was largely based on their histopathologic features which mimicked their adult counterparts. However with advances in molecular biology, pediatric CNS tumors including the brainstem tumors have been identified to be distinct from adult tumors. The common pediatric brain stem tumors are gliomas which are best classified as “low grade” (LGG) and ‘High grade” (HGG) gliomas. The most important point about pediatric brainstem gliomas is that there are different etiologies for genesis of these two grades and transformation of a lower grade lesion to higher grade is not seen. The majority(70-80%) of brainstem gliomas are high grade which were referred earlier as diffuse intrinsic pontine gliomas (DIPG). Unlike the adult HGG these tumors entirely lack IDH mutations and exhibit characteristic K27M histone mutations in H3F3A or Hist1H3B/c and are termed as diffuse midline glioma, H3K27M mutant in the updated WHO 2016 Classification of CNS tumors. Histopathology of these tumors show classic astrocytic morphology with presence of mitotic figures, necrosis and microvascular proliferation. However the tissue diagnosis can be limited by the sample size and some of these may not show obvious mitosis resembling Astrocytoma WHO grade II. So the diagnosis of this entity is entirely based on demonstration of H3K27M mutations irrespective of the morphologic grading. We have observed several phenotypic variations in the diffuse midline gliomas and they can resemble low grade gliomas like pilocytic astrocytoma, pleomorphic xanthoastrocytoma and can show ganglion cells. The mutations testing can be done by sequencing studies or immunohistochemical demonstration by mutant specific antibody. Additional mutations which can be seen in the diffuse midline gliomas include TP53, PDFRA amplification, ACVR1 and ATRX. The presence of H3K27M mutations confer dismal prognosis to the tumor with <10% patients surviving more than 2 years. The brainstem low grade glioma is essentially pilocytic astrocytoma (WHO grade I) which are dorsal exophytic lesions. The grade II diffuse gliomas in children are essentially supratentorial tumors. Pilocytic astrocytomas are characterized by bipolar cells, microcysts and frequent presence of Rosenthal fibers and EGBs. Genetically these tumors show abnormalities of MAPK pathway the common being BRAF and FGFR1 mutations in brainstem cases.

Embryonal tumors seen in brainstem include Atypical teratoid rhabdoid tumors (AT/RT) and the embryonal tumor with multilayered rosettes (ETMR). AT/RTs of brainstem are more frequent in first 2 years of life. The striking histopathologic feature of these tumors is population of cells with rhabdoid morphology with eccentric nuclei showing prominent nucleoli with abundant cytoplasm showing inclusions. Loss of nuclear immunohistochemical expression of INI1/BRG1 is a diagnostic feature of these tumors. ETMR’s encompasses ETNTR, ependymoblastoma and medullopeithelioma. They are characterized by multilayered rosettes comprised of pseudostratified neuroepithelium with centre showing eosinophilic debris. There is amplification of C19MC and Immunohistochemical expression of LIN28A is a diagnostic marker for these tumors.

In conclusion the diagnosis of pediatric brainstem tumors depends on combination of morphology and cytogenetic features which have been included in the updated WHO classification of CNS tumors. These are H3K27M mutant midline glioma, AT/RT with loss of INI 1 and ETMR with C19MC alterations.
**Paper Id: PNSP110**

**Title: Imaging in fetal spinal dysraphism.**

*Dr N Eshwar Chandra*

**Abstract:** **Ultrasound:** Ultrasound is the modality of choice in evaluation of the fetal spine. 3D ultrasound is ideal for evaluating the spine as all 3 planes can be evaluated with 1 acquisition. A 3D bone algorithm renders a skeletal view. Vertebral ossification is first visualized at 16 weeks. Distal ossification is incomplete prior to 19 weeks and may falsely suggest a neural tube defect. The entire bony spine can be imaged on standard views at 20-24 weeks. In the third trimester, more detailed bony anatomy of the spine can be visualized, including the pedicles, laminae, transverse processes and spinous processes. Ultrasound examination should be performed in both axial and longitudinal planes (sagittal and or coronal depending upon the fetal position).

On the axial view in the second trimester, three ossification centers can be seen, a central body and two lateral masses giving a triangular appearance. Neural tube defects appear as a spaying or divergence of the lateral masses. In the sagittal plane, the spine is seen as two parallel curvilinear echogenic lines (vertebral body and posterior elements). The curvature of the spine also should be assessed. Coronal imaging is useful for evaluation of vertebral body anomalies and scoliosis.

**MRI:** MRI is of limited use in evaluation of the vertebral column. However MRI can be performed when visualisation is poor at ultrasound. Main strength of MRI lies in evaluating the spinal cord, more so when fetal surgery is being contemplated for a neural tube defect. MR should also be performed whenever there is a concern regarding spinal cord position (e.g., tethered cord), appearance (e.g., diastematomyelia), or possible mass (e.g., lipoma).

**Things to look for in imaging:**

1. Alignment: To be evaluated in both coronal and sagittal planes. Scoliosis is best assessed in coronal plane and kyphosis is best assessed in the sagittal plane.
2. Number of vertebral bodies. For evaluation of distal spine development to diagnose caudal regression syndrome.
3. Intactness of overlying soft tissues
4. Location of conus medullaris. Superior to L3-4 by 18th week
5. Paraspinal masses
6. Assessment of brain and posterior fossa
7. Other anomalies – VACTERL

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Paper Id: PNSP111

Title: Endoscopic Vs trans cranial approach

Dr N.K. Venkataramana *

Abstract: Craniopharingiomas are complex Tumors of childhood that manifest with neural, endocrine dysfunction with or without raised intracranial pressure. Several approaches have been described based on the size and extensions to various cisternal compartments. All the approaches were associated with significant morbidity and mortality in addition to varied rates of recurrences. Recent years have witnessed an upsurge of endonasal endoscopic approach with better results. Despite the learning curve it has certain distinct advantages. Primarily it has a direct access to the tumour. Primary Tumor decompression relieves pressure on optic pathway before manipulating. Visualisation of hypothalamic attachment is far better in comparison to trans cranial approaches. Overall radical resection rates are higher with acceptable morbidity. Long term results have shown lower rate of recurrence with better visual and endocrine outcomes. However there is a relatively increased risk of csf leak and needs technical expertise.

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Title: Management of resistant intracranial tuberculoma.

Dr. Pradipta Tripathy *

Co-authors- Dr. Ritesh Bhoot

Abstract: Intracranial tuberculoma constitute only 1% of neurotuberculosis, which affects mainly children. They are usually solitary lesions, but in 15 to 34% of cases they may be multiple. The symptoms produced by tuberculoma are location related. The diagnosis mainly depend on C.T Scan or MRI Scan of brain. However confirmation of tuberculoma is always by a histopathological study. WHO guideline of treatment for intracranial tuberculoma is anti tubercular drug HRZE for 2 months of intensive therapy followed by HR for 8 to 10 months of maintainance therapy.

In case of persistence of symptoms and non resolution of lesion, drug resistant(DR) tuberculosis(TB) should be suspected. However, the knowledge on the magnitude of problem of DR-TB is limited in pediatric population due to limited diagnostic capabilities and a higher proportion of paucibacillary nature. In children multi drug resistant (MDR) TB is usually of primary resistance. Children with MDR TB are treated in a similar fashion to adults with MDR-TB. The only difference is that confirmation and drug susceptibility test(DST) may not be possible, so that empirical treatment is required. First step is to increase the dose of first line drug. Add at least 2 to 4 second line drug, one of which should be injectable aminoglycoside. Never add a single drug to a failing regimen which may amplify the resistance. Cases should be regularly followed up for symptoms assessment, treatment adherence, adverse events, weight measurement and dose adjustment. Clinical and radiological response to treatment should also be monitored. Treatment duration should be atleast for 18 to 24 months.

Neurosurgical interventions like excision is required in case of tuberculoma causing mass effect endangering life, causing uncontrolled seizure, doubt on diagnosis of tuberculoma/ tubercular abscess. Shunt surgery in case of tuberculoma causing or associated with hydrocephaalous. Stereotactic biopsy in multiple or diffuse lesions for histopathological confirmation.
ABSTRACT OF INTRACRANIAL HEMORRHAGE IN NEWBORN

Dr. R Murali *

Abstract: Intracranial hemorrhage in the newborn is still a poorly understood phenomenon. The incidence varies between 2 to 30 percent. Factors implicated in the development of ICH are Gestational Age, trauma associated with labour and vaginal delivery, acidaemia, hypoxia, hypercarbia, immaturity of the coagulation system and changes in newborn blood pressure and cerebral blood flow (CBF). The various presentations are Epidural, SAH, IVF and Intraparenchymal hemorrhage. The clinical manifestations and management with emphasis on the indications of surgery are discussed. Recent research into the cause of Pre-term and Germinal matrix bleeds are highlighted.

Results of cyst decompression, Ommaya reservoir placement and radiation therapy for cystic craniopharyngiomas

Ranjith K Moorthy *

Abstract: Aims & Objectives: To evaluate the outcomes following cyst decompression or aspiration after placement of an Ommaya reservoir (OR) for primary and recurrent cystic craniopharyngiomas followed by radiation therapy (RT) for primary or recurrent cystic craniopharyngiomas between 1995 and 2010 was performed.

Materials & Methods: A retrospective review of inpatient and outpatient medical records and radiological images of patients who underwent cyst decompression with OR placement followed by radiation therapy (RT) for primary or recurrent cystic craniopharyngiomas between 1995 and 2010 was performed.

Results: 16 of 24 patients who underwent this management paradigm were available for follow up. There were 9 males and 7 females, their median age at the time of undergoing OR placement being 11.5 years (IQR – 9 to 14 years). The median follow up was 68.5 months (range, 15 to 252 months; IQR – 30 to 121 months). 5 patients underwent stereotactic placement of OR as primary procedure, 4 patients underwent open cyst decompression and placement of OR while stereotactic placement of OR was done as for recurrence in 7 patients. Two patients underwent multiple aspirations through the OR for symptomatic cyst recollection, one during the fourth week and another 7 months following OR placement. Of the 13 patients with available outcomes on vision, 7 patients maintained their vision (normal in 4 patients preoperatively) while 5 patients had improvement in vision at follow up. One patient had deterioration in vision secondary to radiation induced optic neuropathy. 14 of the 15 patients with radiological follow up had no cyst recurrence and had a stable residue that was predominantly calcified. One patient required reoperation for symptomatic cyst distant from site of initial cyst 101 months after initial procedure.

Conclusions: At a median follow up of nearly 7 years, a conservative approach of cyst decompression with OR placement followed by radiation therapy yields good visual outcomes and tumour control in children with primary cystic craniopharyngiomas and recurrent cysts following surgery.

Keywords: Craniopharyngioma, Cyst, Ommaya reservoir, Radiation Therapy, Outcomes
Paper Id: PNSP115

Title: Choroid plexus coagulation applied to pediatric hydrocephalus – current understanding

Dr. Roberto Alexandre Dezena *

Abstract: Endoscopic third ventriculostomy (ETV) is a successful approach in about 80% of children older than 1 year of age, regardless of the cause of obstructive hydrocephalus. For infants younger than 1 year of age, ETV alone remains controversial, probably because of a different CSF pathway. From Uganda series by Benjamin C. Warf, at CURE Children’s Hospital, the addition of choroid plexus coagulation (CPC) at the time of the ETV, to simultaneously reduce the rate of CSF production, might improve the outcome in younger children. In recent papers more understanding is arising in this technique. A current indication for CPC is in the hydranencephaly, to balance CSF production without the use of a shunt, avoiding all complications due to device in this poor prognosis patients.

Endoscopic treatment of Dandy-Walker complex (video)

Dandy-Walker complex is a group of congenital anomalies comprising Dandy-Walker malformation, Dandy-Walker variant, Blake pouch cyst, and mega cisterna magna. Hydrocephalus is variably associated with each of these, and this condition has mostly been treated by a shunt device, often with 2-compartment shunting. There are few reports of management by endoscopic third ventriculostomy (ETV). This video shows the treatment by combined ETV and choroid plexus cauterization in a 6 month baby, as an alternative to avoid a shunt implantation.

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Title: Craniopharyngioma: can we get them to grow up as normal kids?

Dr. Shibu Pillai *

Abstract: Introduction: The management of craniopharyngiomas in children is controversial with advocates for and against complete excision. The resulting outcome, irrespective of the strategy, is almost always associated with a variety of deficits and the objective of getting these patients to grow up as normal children remains a daunting challenge. Common problems include visual loss, endocrine or hypothalamic dysfunction, neurovascular impairment and cognitive deficits. We have followed a protocol based approach to excision of craniopharyngiomas in children based on the extent and type (cyst versus solid) of hypothalamic involvement and presence of hydrocephalus. This study evaluates the functional outcome following this approach and discusses the way forward.

Methods: Retrospective review of prospectively collected data regarding children with craniopharyngiomas managed at a single center over a seven-year period. Pre-operative and post-operative symptoms, signs, radiological (based on Sainte-Rose category of hypothalamic involvement) and hormonal status were compared. Complications were analysed. Functional outcome was assessed using Bloom’s score (Active children capable of self-care, Bloom1-2, were categorized as good outcome and all others, Bloom 3 and 4, as poor outcome), school performance, Kids Screen Score, and the Late Effects Severity Score (LESS). Kids Screen score was Fair (40-60) in 1, Good (61-80) in 4 and Excellent (81-100) in 6 of the 11 children in whom this index of Quality of Life was assessed.

Results: We treated 18 children (age range 5-18 years, mean 12) during this period. The commonest symptoms were headache (16) and visual disturbance (12). Pre-operatively, TSH was abnormal in 6 and cortisol decreased in 3. MRI imaging showed hypothalamic Sainte-Rose Category 1 involvement in 5 and category 2 in 13. 8 children received radiotherapy for residual lesion. At follow-up ranging from 6 months to 5 years, Bloom’s score was 1 in 8, 2 in 6, 3 in 3 and 4 in 1. 11 children were going to regular school and doing well, 3 needed additional help with regular curriculum, 1 child was being home schooled and 4 were not going to school, one because of being in altered sensorium and two because of very poor vision. The LESS score was 1-2 in 7, 3-5 in 10, and 8 in 1. Three children died after their last follow-up; one who was severely disabled following a stroke and the other two had acute deterioration at home leading to precipitous death, probably related to hormonal dysfunction. No child could be considered completely normal in all respects.

Conclusion: Following a protocol based approach, even children with craniopharyngiomas which are large can have a good outcome in more than two-thirds of the patients. However, none of the children could be considered to be completely normal and hence, we need a paradigm shift in the treatment protocols of these children if we want them to grow up as normal kids.

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Paper Id: PNSP117

Title: Why Does Surgery for Chiari Malformation fail?

Dr Shweta Kedia *

Abstract: Chiari malformation decompression surgery aims to decompress the inferior aspect of the cerebellum and establish CSF flow. The failure of surgery may be patient related or the surgeon related. There have been no Class III studies to suggest significant difference in outcome between one approach and the other. To evaluate the various conditions leading to no improvement or worsening of symptoms, it is helpful to review each patient as a different case. More often than not, a wrong diagnosis or missed associated hydrocephalus/Basilar invagination is the cause. The others may present with persistent cervical syringomyelia, occipitocervical instability, anterior basilar invagination, arachnoid cyst development/arachnoid scarring, reformation of the posterior atlanto-occipital membrane, and new or persistent symptoms despite negative imaging studies. Asymptomatic patients may present with imaging-documented findings consistent with persistent compression. Patients with persistent or even new symptoms should undergo re-imaging postoperatively. If the CSF spaces around the posterior aspect of the cerebellar tonsils (or vermis in Chiari II malformation) are adequate and the fossa posterior decompression is good, then the cause of the symptoms may not be directly related to compression. Appropriate surgical steps may be taken depending on the aetiology of failed chiari. To conclude, it may be described as a “Difficult terrain that the patient and the surgeon needs to walk down together to find a cure”*****
Paper Id: PNSP118

Title: To evaluate the significance of intraoperative monitoring in surgery for tethered cord in relation to outcome.

Dr Suhas Udayakumaran *

Abstract: MATERIAL-METHODS: The study was prospectively done in the Division of Paediatric Neurosurgery, AIMS, Kochi, India. 150 patients who are diagnosed with spinal dysraphism and operated and intraoperatively electrophysiologically monitored were included. Their preoperative neurological, urological and orthopedic status compared with post-operative status clinically. Informed consent was taken from all the patient. The duration of study was from from march 2013 to march 2017. Intraoperative monitoring (SSEP, MEP, and Direct stimulation) was done with XELTEK PROTEKTOR 32 IOM System, NATUS NEUROLOGY/MEDICAL INC. Middleton, USA. All statistical analysis was done with IBM SPSS version 19. For finding association with categorical variables Pearson Chi-square test was used.

RESULTS: The following significant observations were made: Out of 150, revision surgeries were for 18, Male:Female = 1:1.6 o Preoperatively, 36% had motor deficit, 64% had normal bladder function, 30% had abnormal bowel function and 38% had orthopedic deformity, 96% had regular follow up. Follow up ranged from 1 month to 6 years. Mean of 2.2 years. During immediate post-operative period 89% had preserved motor function, while 81% had preserved bladder function, 94% had bowel function preserved. On follow up no patient had any motor function deterioration, 1 patient had bladder function deterioration and 1 patient had bowel function deterioration. Sensitivity of IOM in predicting new neurological deficit was 95.4%. Specificity of IOM in predicting new neurological deficit was 66.7%. Positive predictive value was 97.7%. Negative predictive value was 50%. Diagnostic accuracy was 93.6%

CONCLUSIONS: • Intraoperative monitoring is sensitive in diagnosing any neural injury during spinal dysraphism surgery, but are not very specific. • IOM has a good diagnostic accuracy • Postoperative motor and urological outcome was significant.

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Paper Id: PNSP119

Title: ENDOSCOPIC ENDONASAL APPROACH FOR HYPOTHALAMIC GLIOMAS

Dr SURESH SANKHLA*

Co-authors- Narayan Jayashankar, M.A. Khan, G.M. Khan

Abstract: Object. Since past few years, the use of endoscopic endonasal approach for the surgical treatment of a variety of sellar-suprasellar lesions has increased significantly. In this study, we analyze and share our experience with hypothalamic gliomas treated via the endoscopic endonasal approach.

Methods. Five consecutive cases of hypothalamic gliomas treated between 2015 and 2017 via an endoscopic endonasal approach were reviewed. Preoperative and postoperative neuroimaging as well as endocrinological, neurological, and visual symptoms were analyzed to assess the surgical outcome.
Results. Tumor removal was near-total in 1 and partial in 1 other patient. Adequate tumor decompression was achieved in the remaining 3 patients. Histopathological examination revealed pilocytic astrocytoma WHO grade 1 in 3, astrocytoma WHO grade II in 1, and pilomyxoid astrocytoma in 1 patient. The CSF rhinorrhea and transient DI were the most common postoperative complications. Overall, good outcome was observed in all 5 patients.

Conclusions. Our early experience suggests that the endoscopic endonasal approach is a direct, straightforward, and safe approach to hypothalamic astrocytomas. It allows the surgeons to perform tumor resection with the same microsurgical techniques and results comparable to other surgical approaches can be achieved.

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Paper Id: PNSP120

Title: HYDROCEPHALUS BY ZIKA VIRUS

Suzana Serra*

Abstract: In 2015 Arose A Microcephalic Outbreak In Brazil Related To Zika Virus. The Goverment Had Declared An Emergency Situation In November 2015, When The Unusual Increase In Cases Of Microcephalhy Was Noted In Northeastern Brazil. Since The Beginning Of The Emergency By Microcephaly And Zika In November 2015, Brazil Recorded In All 13,603 Suspected Cases Of Microcephaly And Other Changes Linked To Zika, Of Which 2698 Were Confirmed. From January To November 2017 The Health Ministry Received 16,800 Notifications Of Probable Cases Of Zika In Brazil, Which Represents A Reduction Of 92.1% In Relation To The Same Period In 2016. The Incidence Rate Decreased From 103.9 Per 100.000 Inhabitants In The Year To 8,2 Per 100.000 Inhabitants In 2017.

The Most Specific Findings Of Congenital Zika Syndrome Include: Microcephaly, Artrogryposis, Oftalmologic And Hering Abnormalities. In Relation A Hydrocephalus By Congenital Zika Syndrome Was Present In 21 Patients From 115 Cases Confirmed. Some Children Have Developed Hydrocephalus In The Absence Of Specific Symptoms And Some Have Required Ventriculo-Peritoneal Shunt. In General Hydrocephalus Arises Later, Between 10 And Twelve Months Of Age. The Pathophysiology Of Hydrocephalus In Congenital Zika Syndrome Is Still Unknown. There Are Some Theory, Such As: Apoptosis Of Neuroprogenitor Cells, Where The Zika Virus Induces Apoptosis Of Neuroprogenitor Cells, Leadind To The Loss Of Neural Cells. Perhaps This Theory Justifies The Cases Of Non-Hypertensive Ventricular Enlargement, Or Primary Teratogenic Mechanism Not Related To Necrotic Or Inflammatory Lesions, Once The Cerebrospinal Fluid Exam Showed No Inflammatory Reaction And The MRI Scan Did Not Show Subependimal Impregnation. Another Possibility Is Damage To The Cerebral Vascular System, Especially In The Venous Component, Which Leads To The Venous Thrombosis And Venous Hypertension. There Is One Case With Sagital Sinus Thrombosis And One Case Of The Transversal Sinus Irregularity. Both Patients Developed Hydrocephalus.

The Signs And Symptoms Can Be Non-Specific Such As Seizure, Intractable Seizure, Irritability, Vomiting, Worsening Dysphagia, Previous MRI Scan Suggestive Of Hydrocephalus, Increase In Head Circumference, Drowsiness And Recurrent Respiratory Tract Infection. But The Most Common Is Vomiting, Irritability And Intractable Seizure
We Selected Two Cases Of Congenital Zika Syndrome, One With Increased Intracranial Pressure And Another With Ventricular Enlargement Non-Hypertensive

First Case – A One Year Old Boy That Presented As Symptoms Irritability And Intractable Seizure. In This Case The Intracranial Pressure Monitoring Shows High Levels The Intracranial Pressure And The Boy Has Received Vp Shunt. The MrI Scan After Surgery Showed Expansive Lesion On The Postero-Lateral Face Of The Right Bulb.

Second Case – The Girl The Same Age, Presented With A Sign Ct Scan Suggestive Of Hydrocephalus. The Intracranial Pressure Monitoring Showed A Non-Increase Of Intracranial Pressure And The Girl Did Not Need The Vp Shunt.

Conclusion – In Congenital Zika Syndrome There Are Many Questions To Be Answered

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Paper Id: PNSP121

Title: Current Trends in Treatment of Cerebral Palsy using Stem Cells

Syed Ameer Basha Paspala *

Abstract: Cerebral palsy (CP) is a heterogeneous group of medical conditions which results in permanent motor impairment, paralysis, muscle weakness, loss of coordination and involuntary controls. About 1-3 children in a thousand are born with CP and those born with a very low birth weight and preterm infants are at a higher risk. The major pathology of CP includes degeneration of oligodendrocytes due to hypoxia mediated ischemic insult that further results neuronal cell death causing impairment in electrical signal flow throughout the body. This debilitating condition to the child poses unusual burden on the family and society and newer treatment possibilities are urgently required. Transplantation of stem cells in such condition may activate the endogenous regeneration or replace the degenerating oligodendrocytes and neurological cells. In addition, the stem cells for cerebral palsy contribute to reconstruction of new blood vessels and improve blood flow to the affected tissues of the brain. Experts do not doubt that the cellular medicine is an extremely promising field to evolve effective treatment possibilities or CP. However, source for isolation and ex vivo propagation of neuronal cells without genetic manipulation represents major challenge. Our preliminary studies have demonstrated the isolation, characterization and in vitro differentiation of neurological cells for their application in such neurological conditions. However, further evidence-based studies are required to provide more authenticated proof-of-concept for the clinical applicability of stem cell-based treatment strategies in CP.

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**Paper Id: PNSP122**

**Title: Subdural hematoma/subdural fluid collection in benign extracerebral fluid collection in infancy**

*Kyu-Chang Wang* *

**Co-authors-** Hee Chang Lee, Sangjoon Chong, Ji Yeoun Lee, Jung-Eun Cheon, Ji Hoon Phi, Seung-Ki Kim, In-One Kim

**Abstract:** Benign extracerebral fluid collection (bECFC) can be complicated by subdural hematoma (SDH) or subdural fluid collection (SDFC). The entity of bECFC is briefly introduced. The etiology, natural history and management strategy for SDH/SDFC in bECFC is not fully understood. We retrospectively reviewed the cases of bECFC patients complicated with SDH/SDFC and tried (1) to confirm the fact that bECFC children are vulnerable to SDH/SDFC, (2) to investigate the clinical significance of ‘trauma history’ witnessed by a caregiver, and (3) to determine optimal management for them.

Among 213 bECFC patients identified from January 2000 to August 2015, 20 patients (M:F=14:6; median age, 6.5 months; range 1-16 months) complicated by SDH/SDFC documented with brain imaging were evaluated for their clinical manifestations, radiologic features and management outcomes. The median follow-up period was 9.5 months. They were divided into 2 groups (traumatic group versus non-traumatic group) according to whether objective radiologic evidence of head injury was present or not, and the two groups were analyzed for any clinical differences between them. We also evaluated the clinical significance of witnessed traumatic events by caregivers as an additional independent variable in the analysis.

The incidence of SDH/SDFC in bECFC patients was 9.4% (20/213) in our data. In a comparative analysis, the traumatic group is more likely to have ‘acute’ stage SDH, whereas the non-traumatic group is more likely to have ‘chronic’ stage SDH. The ‘trauma history’ witnessed by caregivers did not show clinical significance in the data analysis when included as an independent variable. The prognosis of SDH/SDFC in bECFC patients was favorable without surgery in most of patients regardless of whether the patient has evidence of head trauma or not.

Benign ECFC is vulnerable to SDH/SDFC development. For the bECFC patients complicated by SDH/SDFC, the ‘trauma history’ witnessed by a caregiver did not show any clinical significance. A ‘wait and watch’ strategy is sufficient for the management of SDH/SDFC in bECFC patients. In addition, our speculation on the mechanism of SDH/SDFC formation and its implication are presented.

**Key words:** Benign extracerebral fluid collection in infancy, Subdural hematoma, Subdural fluid collection, Trauma history.

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