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## 4TH PEDIATRIC NEUROLOGY CONFERENCE Children Medical center, Lahore February 2013

### CLINICAL AND INVESTIGATIONAL VARIABLES FOR EARLY DIAGNOSIS OF TUBERCULOUS MENINGITIS IN CHILDREN

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**Objective:** Clinical and investigational variables indicators of early diagnosis suffering from tuberculous meningitis in children.

**Design:** Case control prospective study  
Place & duration of study: Department of Neurology Children's Hospital, Lahore from March 1, 2010 to August 30, 2012.

**Subjects & Methods:** Clinical data of 100 patients being treated as TBM (group A) admitted in the Neurology department, and another 100 patients with diagnosis of meningitis, encephalitis or cerebral malaria (group B) were evaluated. History, clinical examination and relevant investigations were evaluated and Kenneth Jones criteria were applied to both groups. All children were followed and their outcome was also studied.

**Results:** Data of 100 patients with TBM and controls was analyzed. Among group A children 26% were less than 2 years of age. Male to female ratio was 1.2:1. Duration of symptoms was more than 1 month in 73 children. 28% children had cranial nerves palsies, 33% children had hemiplegia and 38 children had GCS less than 7 at the time of presentation. Clinically 77% children were in TBM stage III and 22% were in TBM stage II and only one child was in TBM stage I. 56% children had contact to TB patient. Mantoux test was applied in 73 children and only 17 had induration of more than 10 millimeters. Radiological findings of hilar lymphadenopathy were seen in 31% children and seven children had miliary shadowing. Hydrocephalus was seen in 67 Children and 47 children develop basal meningeal enhancement. 26 children had brain Tuberculoma. Above 50 ESR was seen in 43 children. Surgical intervention was carried out in 48 children and 4 children developed acute hepatitis during the 2nd week of treatment. Only 9 children lost their lives during the first admission (period varies from 10 day to 38 days) while another 7 children expired subsequently.

**Conclusion:** Tuberculous meningitis remains a serious

health threat in developing countries. The variable, natural history and accompanying clinical features of TBM had significant capacity for the early diagnosis and prognosis if applied scientifically.

### ACUTE BACTERIAL MENINGITIS IN CHILDREN - FINDINGS FROM THE EMERGENCY DEPARTMENT OF A TERTIARY CARE HOSPITAL

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**Objectives:** 1) To determine the signs and symptoms of acute bacterial meningitis (ABM) in different age groups of a paediatric population. 2) To determine the role of CT scan in children with ABM.

**Methods:** This study is a retrospective study of patients who had been admitted through the Emergency Department (ED) of AKUH, Karachi with the diagnosis of ABM. Case record forms were used to collect data from patient files. Data collected using variables such as age, sex, presenting complaints, clinical signs and symptoms, CT scan findings and final outcome of patients. There is a minimal risk of breach in patient confidentiality.

**Results:** A total of 192 patients were admitted with a diagnosis of ABM. The presenting complaint in 165 patients (86%) was fever, vomiting was present in 93 patients (48.43%), among them 49 (52.68%) were more than 5 years old. Irritability was present in 54 children (28.12%), of whom 27 (50%) were less than one year. Fits were present in 47 cases (24.47%) out of which 21 (44.68%) were less than one year. Neck stiffness and signs of meningeal irritation, Kerning's sign and Brudzinski's sign, were present in 53 patients (27.60%), 26 (13.54%) and 18 (9.3%) respectively. These signs are more common in children over 5 years of age, reflected by 29 patients (54.7%), 16 (61.5%) and 11 (61.11%) respectively. On presentation headache was found in 77 children (40.10%) amongst which 56 (72.72%) were over 5 years. CT-scan was performed on 114 patients (59.4%). Positive findings on CT scan were present in 24 patients (21.0%) which showed

cerebral oedema in 16 (66.66%), hydrocephalus in 2 (8.3%) and cerebral infarct in 6 patients (25%). 151 patients (78.6%) were admitted to the ward while 40 (20.8%) were admitted in HDU/critical care units. Adverse outcome was observed in 6 patients (3.12%).

**Conclusion:** Younger children with ABM present with nonspecific signs and symptoms. Headache and signs of meningeal irritation are common findings in children over 5 years. CT-scan may have a beneficial role in diagnosis of ABM.

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### A REVIEW OF CEREBRAL VENOUS SINUS THROMBOSIS IN CHILDREN

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CVST in children is increasingly recognized as diagnostic tools and clinical awareness has improved. It is a multifactorial disease where prothrombotic risk factors and predisposing clinical conditions usually in combination constitute the underlying etiology. Clinical features range from headache, seizures to comatose state. Although symptomatic treatment involving control of infections, seizures and intracranial hypertension is uniform, use of anticoagulation and local thrombolytic therapy is still controversial. Morbidity and mortality can be significant and long-term neurological sequelae include developmental delay, sensorimotor and visual deficits, and epilepsy.

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### SPECTRUM OF NEURO DEGENERATION IN CHILDREN

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**Objective:** To find out the spectrum of diagnosis, clinical presentation and role of neuroimaging in neurodegenerative disorders of childhood.

**Design:** Descriptive study. Place & duration of study: Department of Neurology Children's Hospital, Lahore from June 1, 2005 to May 31, 2009.

**Subjects & Methods:** A total of 1273 patients were admitted in the Neurology department in the said period. Out of them 66 children fulfilled the inclusion criteria. History, clinical examination and relevant investigations were carried out and profarmas were filled.

**Results:** Male to female ratio was 1.4:1. Age range was one to twelve years. Metachromatic leukodystrophy was the predominant type 14 (21%), followed by 11 cases of adrenoleukodystrophy (16%) and 8 patients with SSPE (12%). 6 children (9.8%) have Wilson Disease. Five cases (7.5%) were diagnosed as Friedrich

ataxia, four cases (4%) of lipidosis, 3 case were diagnosed as Gaucher disease(4.5%) , and two cases (3%) of each Alexander disease, Hellervordenspatz disease, one case each of multiple sclerosis and ataxia telangiectasia. In six cases final diagnosis could not be made.

**Conclusion:** Degenrative brain diseases are not uncommon entity in paediatric population. Commonest presentation is regression of mile stones through it may be variable. Presentation is quite variable. Physicians must look into it when dealing with children having regression of milestones to diagnose them earlier. Because of limited diagnostic modalities, brain imaging has significant value. Facilities for enzyme studies should be available at tertiary care hospitals. Key words: Neurodegeneration, Gaucher disease, Metachromatic, Adrenoleukodystrophy, Wilson disease, Sub acute sclerosing panencephalitis.

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### RESPONSE TO DIFFERENT ANTI CONVULSANTS IN PATIENTS PRESENTED WITH SEIZURES IN EMERGENCY DEPARTMENT OF THE CHILDREN'S HOSPITAL, LAHORE.

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**Aims:** To determine the response of different anti-convulsants in children presented with seizures in Emergency Department.

**Material & methods:** All patients from 30 days to 12 years of age with complaints of convulsions admitted in emergency department of Children's Hospital, Lahore from 15th Nov 2012 to 31st Dec 2012 were included. I/V line maintained and all relevant investigations sent. Drugs used in order of preference according to hospital protocol were: inj. medazolam, inj: phenytoin , inj Sodium valproate, infusion of medazolam and general Anesthesia. Children with metabolic causes were excluded from study.

**Result :** 517 patients presented with seizures. 58% were males. Patients were divided into 4 groups according to age. Maximum number of patients were from 6 months to 2 years (40%). 18 % were controlled by 1st dose of inj. Medazolam, 8% with 2nd dose and 1% with third dose (27% total). 73% patients were treated with 2nd line drug. 40% patients responded to 1st dose of inj. Phenytoin and 19% with 2nd dose. 9% patient's responded to 3rd line drug; infusion sodium valproate. 4% responded to infusion medazolam . 1% needed general Anesthesia. 170 patients were excluded

from study. Convulsions of 89 patients were resolved on their way to hospital. 81 patients were excluded as they had metabolic causes of convulsions.

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### ROLE OF GAMMA KNIFE RADIOSURGERY IN PEDIATRIC BRAIN LESIONS.

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The goal of radiosurgery is to deliver a high dose of radiation to a discrete target while minimizing radiation to surrounding tissue. The Gamma Knife System, which is a gold standard in radiosurgery, accomplishes this by directing multiple 201 beams of gamma rays to a single target. Extensive experience has been obtained with stereotactic radiosurgical procedures over the past five decades. Gamma knife is being increasingly used to treat a variety of neurologic disorders in children. Although there are many similarities, stereotactic radiosurgery in children differ from that in adults in a number of important aspects. Children are especially sensitive to potential side effects of whole brain irradiation. The ability of Gamma knife radiosurgery to deliver high radiation doses to a defined area and minimizing radiation doses to surrounding brain tissue makes this modality a very important option in pediatric population.

The pathologies encountered in pediatric neurology are different. Thus, the treatment options including the indications for gamma knife vary. The two most important indications for gamma knife surgery in children are to treat brain tumors and arteriovenous malformations. Leksell Gamma Knife was commissioned in Pakistan Gamma knife Center, Neurospinal and Medical Institute in may 2008, since then 1465 patients have been treated for various brain lesion, including 97 (0.06%) pediatric patients. There were 34 female and 63 males in the pediatric group. The age ranged from 2 years to 14 years. Although most adult patients have gamma knife surgery under local anesthesia with light sedation, almost all children less than 12 to 14 years undergo radiosurgery using general anesthesia.

The tumor population in the pediatric group was composed of astrocytomas 42 (56%), craniopharyngiomas 11 (14%), Pineal Region Tumors 07 (0.09 %). Ependymoma, and other tumors including pituitary, choroid plexus papilloma, ganglioglioma, acoustic schwannoma. There were 24 patients with arteriovenous malformation who were treated with

excellent results.

The above mentioned brain lesions along with their subsequent management with Gamma Knife surgery will be described in detail.

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### DOES ELECTROENCEPHALOGRAPHY HELP IN EARLY DIAGNOSIS OF SUBACUTE SCLEROSING PANENCEPHALITIS

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**Objective:** To find out the role of electroencephalography in the early diagnosis of subacute sclerosing panencephalitis.

**Design:** Cross sectional observational study. Place & duration of study: Department of Neurology Children's Hospital, Lahore from April 15, 2005 to September 15, 2010.

**Subjects & Methods:** Children between the ages of 4 to 18 years (n=29) with myoclonic jerks were admitted in Neurology department. History and clinical examination was carried out and EEG and CSF antimeasles antibodies were performed. Children may have EEG findings consistent with SSPE (EEG abnormalities having burst suppression in high amplitude slow and sharp waves recur at 3-5 second interval on slow background) or other EEG findings like myoclonic epilepsy with normal background, normal EEG etc. CSF of all children was sent for antimeasles antibodies for further confirmation which was considered diagnostic. Brain imaging was done in all children to exclude other possible diagnosis.

**Results:** Total of 19 patients with EEG findings of subacute sclerosing panencephalitis were further confirmed with CSF anti measles antibodies. It was positive in 17 children. (P value < 0.05). While ten children had negative EEG findings and all of them had negative results for CSF antimeasles antibodies. Male to female ratio was 1.4:1 with 11 males and 6 females. Age range was six to fifteen years.

**Conclusion:** Subacute sclerosing panencephalitis is not an uncommon entity in our population with quite variable clinical presentation and electroencephalography has significant value in early, cost effective and reliable diagnosis.

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### FREQUENCY OF ABNORMAL ELECTROENCEPHALOGRAM IN CHILDREN WITH EPILEPSY AT A TERTIARY CARE

## HOSPITAL IN KARACHI.

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**Introduction:** Epilepsy is a common chronic neurological disorder characterized by seizures. These seizures are transient signs and/or symptoms of abnormal, excessive or hyper synchronous neuronal activity in the brain. Electroencephalogram (EEG) provides important diagnostic and prognostic information in patients presented with seizures.

**Objective:** To determine the frequency of abnormal electroencephalogram (EEG) in children with epilepsy in patients presenting to tertiary care medical facility.

**Methods:** 201 patients with epilepsy fulfilling the selection criteria and informed consent were included in study. Demographic features along with patient's history, primary diagnosis and EEG findings were recorded by primary investigator.

**Result:** Our sample was of 201 patients with seizure disorder. Mean age was  $54.3 \pm 48.3$  months. Male were 127 (63%). Mean duration of seizure was  $5.7 \pm 7$  minutes. EEG was performed in 46% of patients within 24 hours. Abnormal EEG was found in 94 (47%) of patients. Most common 37 (39%) abnormality on EEG was presence of both abnormal background activity and intrerictal epileptiform discharges.

**Discussion:** Epilepsy is defined as the repeated occurrence of unprovoked epileptic seizures. Meticulous history-taking should include inquiry about unexplained falls, absent states, and morning clonus. Furthermore, a complete pediatric medical and neurological examination should be performed for the exclusion of other underlying conditions. EEG is the most informative instrument for the diagnostic evaluation of epileptic seizures. The recording of a sleep phase and the use of provocative techniques such as photic stimulation and hyperventilation double the sensitivity of EEG for epilepsy in children.

**Conclusion:** Our results showed that 47% of patients presented with seizure had abnormal EEG. We recommend further studies with large sample and multiple settings to reach the firm conclusion.

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## CAUSES AND OUTCOME OF INTRACRANIAL BLEED IN CHILDREN PRESENTING TO EMERGENCY DEPARTMENT

## OF TERTIARY CARE HOSPITAL

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*Introduction: Intracranial (IC) bleed spontaneous and traumatic are important cause of morbidity and mortality in children.*

**Objective:** To determine the causes and outcome of children presenting to emergency department of a tertiary care hospital.

**Material and Method:** The study was conducted at Emergency department (ED) of Aga Khan University (AKU) from Jan 2009- Dec 2010. The charts of the patients with Intracranial bleeding were reviewed retrospectively. Data was collected on variables like age, gender, symptoms, clinical presentations CT scan findings, cause of bleeding and final disposition with outcome were recorded in a predesigned proforma. Data was entered and analyzed using SPSS version 19.0.

**Results:** During the study period total 145 children presented to emergency department with suspected Intracranial Bleed. The mean age of presentation was 5.6 years  $\pm$  4.26 years with 27(18.6%) less than 1 year of age. Males were 100(69%) and females were 45(31%). The presenting complaints were headache (16.6%), altered level of consciousness (40.7%), seizures (29.7%), vomiting (51%) and fever (20.7%). Duration of symptoms was less than a week in 72.4% of patients. History of trauma was found in 104(71.7%). Anemia was found in 80(55.2%) and thrombocytopenia in 11(7.6%). Deranged PT was in 24(16.6%) and APTT was in 19 (13.1%) and factor deficiencies were found in 19(13.1%). Ct scan showed extradural in 30.3% , parenchymal in 26.2% , subdural in 25.5% , cerebral edema in 71.7% and midline shift in 27.6%. Almost 32.4 % patients were shifted to operating room immediately .PICU admission was needed in 64.1% and 15.2% expired .Two percent patients were done do not resuscitate because of poor prognosis. GCS was less than 8 in 14.5% and stayed more than a week in 22.8%.

**Conclusion:** Intracranial bleed is a common reason for Emergency department visits in children. Trauma is an important cause of intracranial bleeding in children.

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## CONVERSION REACTION IN CHILDREN

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**Objective:** To find out the spectrum of conversion disorder in children and its correlation with child neglect and maltreatment.

**Design:** Descriptive study. Place & duration of study: Department of Neurology Children's Hospital, Lahore from January 1, 2007 to December 31, 2008. Subjects & Methods: A total of 57 patients with the diagnosis of conversion disorder were admitted in the Neurology department.

**Results:** Male to female ratio was 2:3. Age range was seven to sixteen years. Seizures were the predominant type (n=24), followed by 11 cases of gait difficulties and 8 patients with hemiplegia. Eleven children were presented with acute psychosis and 3 with aphasia.

**Conclusion:** Conversion disorders are not uncommon entity in paediatric population. Commonest presentation is seizures though it is quite variable. Physicians must think when dealing with children having unexplained symptoms.

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#### CLINICAL EXPERIENCE AND OUTCOME OF CHILDREN ADMITTED WITH STATUS EPILEPTICS IN PICU OF AKUH KARACHI

*Khalid Ahmed, Sidra Kaleem Jafri, Faria Bhatti, Anwar ul Haque<sup>1</sup>,*

**Introduction:** Status epilepticus (SE) is a common, life-threatening neurologic disorder. The exact incidence is not known. The frequency of occurrence of status epilepticus is 17-23 per 100,000 persons per year, with the higher incidences occurring in developing countries. In children the mortality from SE ranges from 3-10%.

**Objective:** To study the clinical profile and outcome of children with status epilepticus at a Tertiary Care Hospital in Karachi. Method: We retrospectively reviewed the medical records of all children admitted in our institution with diagnosis of status epilepticus (ICD 9 code 3453). Demographic and pertinent clinical variables were collected on structured performa. Appropriate statistical tests were applied for various demographic, clinical, lab parameters and short term outcomes.

**Result:** During the study period, fifty patients were identified. Mean age was 51 months (age range was 1-168 months with SD± 41 months). There were 29

male and 21 female. Generalized tonic clonic seizures were the most common (86%) form of seizures observed. Twenty-five (50%) patients were newly diagnosed with no prior history of seizure. Infection was the most common etiology (52%). No biochemical abnormalities were observed in our study. Abnormal EEG was reported in 62% of patients. CSF abnormalities were observed in 22%. Minimum 2 and maximum 8 anti-epileptic

drugs were used (mean= 4.33). The most commonly parenteral drugs included phenytoin, phenobarbitone, levetiracetam and valproic acid. Thirty-one (62%) patients required continuous midazolam infusion. In majority (44%), status was controlled after more than 60mins. Thirty-three (66%) patients required PICU admission for seizure control. Thirty-one (62%) required mechanical ventilation, twenty-five (50%) required inotropic support. Mean PICU stay duration was 3.89 days (range=1-15 days). Survival rate was 92%. The cause of death (n=4) was related to underlying systemic illness. No complications were observed in forty-one (82%) patients. Conclusion Pediatric status epilepticus is a common emergency. However, good intensive care management and timely use of anti-epileptic drugs supported by mechanical ventilation can improve the outcome.

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