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ABSTRACTS First Annual Neurology Research  
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# ABSTRACTS

FIRST ANNUAL NEUROLOGY RESEARCH DAY

SHIFA COLLEGE OF MEDICINE &  
SHIFA INTERNATIONAL HOSPITALS

ISLAMABAD

SEPTEMBER 1, 2007

### 1. Gaps between knowledge and evidence about management of hypertension in ischemic stroke:

**Where do we stand?** Nausheen Hussain, Nabil S. Malik, Rabia Akhter, Zill-e-Huma Zeb, Zainab Nosheen, Ali Gohar, Aatif Jahangir Lashari, Shifa College of Medicine, Islamabad

Background: Hypertension is a leading cause of ischemic stroke and a major modifiable factor for both primary and secondary prevention. We explored knowledge and perceptions of physicians regarding management of hypertension in acute ischemic stroke patients. Methods: A survey was designed and statements were derived from the recommendations from American heart association/American Stroke association stroke council guidelines published in 2006 JNC VII. 60 surveys were distributed to the physicians at Shifa College and Shifa International hospital, Islamabad. Results: Mean duration from MBBS was  $10.3 \pm 9.9$  years. When asked about the management of a BP of 170/90 mm Hg in a patient with acute stroke at 3 and 24 hour interval, 58.6% and 60% recommended that patient be treated for this blood pressure on these intervals. 69.7% thought that lowering blood pressure is the single most important factor for primary prevention and 21.2% thought aspirin as the sole first line primary prevention. 22.5% recommended ACE inhibitors and or angiotensin receptor blockers for secondary prevention of a hypertensive ischemic stroke. 50% thought that females do not have higher stroke mortality when compared with men. When asked to rate risk factors for stroke in order of importance as compared with guidelines: 78.8% rated hypertension as number one risk factor, 9% rated smoking as number two, 18% rated Diabetes Mellitus as number three, and 18% rated dyslipidemia as number four. Conclusion: There is a considerable gap between evidence-based recommendations and actual perceptions of physicians in managing hypertension in stroke patients which requires emergent steps by regulatory bodies to implement evidence based paradigm at both under and post graduate levels to improve quality of care.

### 2. Stroke awareness among at risk patients: Tertiary care experiences from Rawalpindi and Islamabad.

Yasir Mateen, Aftab Iqbal, Raja Muhammad Rashid, Sara Ijaz Gilani, Abdul Ahad, Muhammad Faisal, Sidrah Durrani. Rawalpindi Medical College, Rawalpindi

Background: Stroke knowledge, individual stroke risk perception and health-care seeking practices are determinants of stroke risk reduction and appraisal/illness delays in hospital admission. This study aims to determine education opportunities, currently being missed, to increase stroke awareness among at-risk

patients in Pakistan. Objective: To assess the knowledge, attitudes and practices (KAP) regarding stroke among patients at an increased risk of stroke. Methods: A facility based cross-sectional survey was conducted from 1st to 15th June, 2007 in tertiary care hospitals of Rawalpindi/Islamabad on a convenient sample of 240 patients, aged 40-65 years having atleast one established stroke risk factor using a standardized, pre-tested questionnaire comprising of an open-ended KAP assessment and further risk factor/warning symptom knowledge evaluation by a validated, closed-ended component, the Stroke Recognition Questionnaire (SRQ). Results: In open-ended assessment, 51.7% knew atleast one correct risk factor, 80% knew atleast one correct symptom. Most common incorrect risk factor reported was stress/anxiety (30%). Only 28.75% of participants identified brain as organ primarily affected by stroke. Mean correct closed-ended responses (max. 10): stroke risk factor score= $7.47 \pm 2.28$ , non-stroke risk factor score= $4.03 \pm 2.34$ , stroke symptom score= $8.74 \pm 2.11$ , non-stroke symptom score= $3.84 \pm 2.74$ . 13.3% got stroke information from health professionals. 58.3% didn't perceive themselves at increased stroke risk. However, most participants identified stroke as a fatal (87.5%), preventable (89.5%), treatable (91.7%) disease. In case of stroke, 90.8% would call for immediate hospital/physician services. Conclusions: Because of poor to moderate stroke risk factor knowledge, study participants were largely unaware of their increased stroke risk. Intensive health education is needed to improve stroke awareness, especially among vulnerable groups.

### 3. Mitoxantrone in the treatment of secondary progressive multiple sclerosis: Outcome in 5 patients.

Nauman Saleem Siddiqui, Ahmed Yasir, Arsalan Ahmed, Saleem Ahmed Siddiqui, Shifa College of Medicine, Islamabad

Background: Multiple sclerosis (MS) is an autoimmune disease of central nervous system involving more than one functional system and can be quite disabling in all of the drugs that are approved for the treatment of relapsing forms of MS, Mitoxantrone is an immunomodulator approved for the treatment of relapsing-remitting MS and secondary progressive MS. Early treatment is desirable to reduce the progression and to limit the long term disability. Objective: To document the response of Mitoxantrone in secondary progressive Multiple Sclerosis in the form of improved functionality assessed with EDSS. Method: Retrospective Chart Review of all patients who received Mitoxantrone for Multiple Sclerosis in the last four years, including 5 patients receiving Mitoxantrone for secondary progressive MS. Results: The mean age of

onset was 36.5 years with a range of 17-56 years and male to female ratio of 2; 3 Visual problem was the common symptom among all 5 patients.... MRI was abnormal in all 5 patients VEP was abnormal in only 3 patients rest did not had it done. 75% of patients completed the course of mitoxantrone of 18 months with excellent tolerability and compliance. EDSS was improved in all 5 patients after receiving Mitoxantrone more so in patients who had completed full course of therapy. Conclusion: Mitoxantrone is not only promising in reliving the disability of patients but also very cost effective when compared to B-Interferon and for a third world country like Pakistan should be considered as a first line drug in treatment of Secondary progressive and relapsing remitting multiple sclerosis.

**4. Pitfalls in stroke rehabilitation: A Pakistani perspective.** M. Farooq Azam Rathore, Tariq Malik, Armed Forces Institute of Rehabilitation Medicine, Rawalpindi

Background: Stroke is an important cause of long-term disability. Timely and comprehensive stroke rehabilitation minimizes the impairments and leads to successful reintegration of individual into the society. Objectives: To identify short comings in the stroke rehabilitation referral and consultation in Pakistan. Methods: 171 patients of stroke presenting to the Stroke Clinic at AFIRM, Rwp and fulfilling the inclusion criteria were enrolled in the study. Detailed history was obtained and a thorough examination with emphasis on neurological and musculoskeletal system was performed. Medical records and radiological investigations were reviewed. Results: There were 132 males and 39 female patients. Ischemic stroke (82%) was more common. Involvement of right and left cerebral hemisphere was almost equal with 53% and 47% respectively. Majority 153 (89.5%) of the patients were referred as OPD cases while indoor rehabilitation consultation was made only for 18 (10.5%) patients. Only 04 patients were seen within 48 hours of stroke onset. In 39 cases consultation was made between one week to one month and for 116 between one to six months, while it was delayed beyond six months in 12 patients. Important shortcomings identified were non availability of physicians in rehabilitation medicine, late/ no referrals, inadequate referrals, long term placement of indwelling catheters and lack of patient and family education. Conclusion: Stroke rehabilitation is a poorly understood concept in Pakistan. Physicians are either not aware of the concept and significance of stroke rehabilitation or often confuse it with physiotherapy alone. There is a need to improve the stroke rehabilitation services in the country.

**5. Evaluation of levels and patterns of spinal cord injuries in the earthquake of October 8th, 2005, in Pakistan.** Shirin Mirza, Syeda Fizza Tauqir, Shehzad Gul, Hirra Ghaffar, Asif Zafar Malik, Holy Family Hospital, Rawalpindi Medical College

Background: To determine the extent of spinal cord injuries among patients affected by the earth quake of October 8th 2005 in Pakistan, through a cross sectional study. Methods: Focus of the study were the surgical and neurosurgical units of Rawalpindi Medical College and allied hospitals (Holy Family Hospital, Rawalpindi General Hospital and District Headquarters Hospital) and Melody relief and rehabilitation center, Islamabad, where one hundred and ninety four patients suffering from spinal cord injuries were admitted. Level and patterns of spinal cord injuries was evaluated according to ASIA (American Spinal Injuries Association) scoring system. Stability of spine and number of patients operated for spinal cord injuries was also assessed. Results: One hundred and ninety four patients comprised of 74%(n=144) females and 26%(n=50) males. 78%(n=151) patients were of 16-39 yrs of age. 62%(n=120) of patients had injury at lumbar level, 25%(n=48) at thoracic level, 9%(n=18) at thoracolumbar level, a few had injuries at cervical and sacral level. 46.4%(n=90) patients had spinal cord injuries which were graded "A" according to ASIA scoring system. 4.12%(n=8) graded as "B", 10.82%(n=21) graded as "C", 9.2%(n=18) graded as "D" and 13.91%(n=27) graded as "E". 69%(n=134) patients' spine was stable and 31%(n=60) had unstable spine. 77 % ( n=150) patients were operated and in 23 % ( n=44) patients, operation was not indicated. Conclusion: Majority of spinal cord injuries occurred at thoracolumbar level leading to paraplegia. Those with ASIA score "A" would be bedridden for life. Proper rehabilitation programs should be inculcated to enable them to live an independent life.

**6. Awareness of health care professionals towards brain death, organ transplantation and euthanasia.** Hasan Ali, Muhammad Nadeem, Ayesha Abbassi, Inaytullah Khan, Shifa International Hospital, Islamabad.

Background: The universally accepted criteria for the diagnosis of brain death have been established, which include certain pre-conditions, exclusions and test of brainstem function. In one survey of general population at USA, only 33 % believed in brain death. Another study at Turkey showed a statistically significant difference to identify brain death before and after training. 2/3rd of Physician and Nurses were unaware of criteria for determining death. Pakistan is among the few countries, where no legislation exists regarding brain death and to facilitate organ donation and transplantation. Similarly, in

other countries, there are a lot of discussions and controversies about brain death, organ transplantation and euthanasia. Objectives: This study was carried out to have an objective evidence of level of knowledge among health care providers about brain death in Pakistan. Methods: It was a cross-sectional study with Convenience sampling. A questionnaire was provided to various health care professionals about brain death, organ transplantation and euthanasia. The data was analyzed using SPSS version 10.0. Results: 200 questionnaires were filled and analyzed. Most of the responders (95%) knew about the location of cardio respiratory centre. Only 38% were aware of pre-requisites and 64% knew about signs of brain death. 43% did not believe in death if the heart is working. 93% favored organ transplant but interestingly only 40% allowed organ harvesting in one of their close relatives. 20% believed euthanasia to be judicious. There was statistically significant difference among various health care providers for all the variables. Conclusion: A significant population among health care workers is unaware of signs and pre-requisites of brain death, organ transplantation and euthanasia.

**7. Surgical fixation of the lumbosacral spine in earthquake victims.** Khurram Siddique, Saleem Ahmad, Mudassar Qazi, Naeem Akhtar, Department of Orthopaedics, Rawalpindi General Hospital

Background: The incidence of spinal Cord injury varies widely. It is mostly the fractures of the spine which causes injury to the cord as well. Most injuries occur either because of the road traffic accidents (50%) or the domestic or industrial accidents (40%). An early diagnosis and management of the spinal cord Injury is very important to prevent major neurological loss. Spinal Cord Injury should be suspected whenever a patient presents with neck or back pain, sensory disturbance in hands or feet, weakness and paralysis of the arms and legs. Amongst the Earth Quake Victims which were brought to the three Allied Hospitals; many of them suffered from Spine trauma. As the Injuries to the spine can cause compression or can lead to selective involvement of the part of the cord and may cause either Central Cord Syndrome, Anterior cord Syndrome or Brown Sequard Syndrome. Thus, the neurological examination is of utmost importance for determining the level of injury. Plain radiographs both A/P and Lateral views are required for the diagnosis but CT-Scan remains the authentic investigation for making the correct diagnosis. Objectives: The main objective of the study was to 'Evaluate the results of early Spine Fixation to prevent further neurological Injury'. Material & Methods: A study was conducted in Rawalpindi General Hospital for three months in which all the patients who presented with the spine trauma were categorized in

various classes according to Frankel's classification. They were assessed for neurology before and after the internal fixation of the spine. The patients with the complete neurological loss were excluded from the study. These patients were later on assessed for improvement in Neurological function and then results were drawn. Results: The study showed that the outcome of Internal fixation of Spine was remarkable and Patients from the Frankel's class B, C and D all showed improvement and landed in class E after a few weeks.(around 86%). Conclusion: It is therefore recommended that early fixation of the Spinal Cord should be done not only to prevent major neurological loss but also to get the best results.

**8. Early tracheostomy: Effect on the outcome of severe head injury patients.** Syed Muhammad Raza Ali Shah, Ehtesham Ghani, Adil Aziz Khan, Noor Ahmed, Khaleeq uz Zaman, Department of Neurosurgery, Pakistan Institute of Medical Sciences, Islamabad

Background: Tracheostomy is a frequently performed procedure in patients with severe head injury. It helps improving the ventilation by reducing dead space. Objectives: To assess the effects of early tracheostomy on the outcome of head injury patients. Methods: This study was done in the Department of Neurosurgery, Pakistan Institute of Medical Sciences, Islamabad from December 2006 to May 2007. In this retrospective study data was collected through patients' record books and files. Patients were divided into two groups: 1) Group A - patients with early tracheostomy done within seven days, 2) Group B - patients with late tracheostomy done on day 07 or later. Only patients with isolated severe head injury were included in this study. Results: A total of 54 patients were studied. Mean age and male to female ratio were similar in both groups. Mean Glasgow Coma Scale (GCS) in group A was 5.5 and in group B was 5.1. Mean time of tracheostomy in group A was 3.7 days and in group B was 7.9 days. Ventilator support was required in 30% and 50% in group A and B respectively. Mean hospital stay was less in group A (mean = 17 days) as compared to group B (mean = 25 days). Mortality rate was 23% in group A and 45 % in group B. Conclusion: Early tracheostomy in severe head injury patients favors good outcome, less need for ventilator support, reduces hospital stay and mortality.

**9. Knowledge and perceptions of physicians about early management of acute ischemic stroke.** Sidra Sheikh, Nausheen Hussain, Nabil S.Malik, Rabia Akhter, Zill-e- Huma Zeb, Zainab Nosheen, Ali Gohar, Aati Jahangir Lashari, Naema Liaqat, Shifa College of Medicine, Islamabad

Background: Stroke is a major cause of morbidity and mortality in elderly patients. In Pakistan, knowledge and perceptions of physicians about management of acute ischemic stroke have not been explored. Methods: We designed a survey pertaining to management of acute ischemic stroke to be rated on a three-point scale. The statements were derived from evidence-based guidelines from stroke council of American Heart/American stroke association (2005). The survey was distributed to the house officers, medical officers, post-graduate trainees, and faculty members. We distributed 60 surveys all over the hospital. Results: 36 surveys were returned. 23 respondents were from medicine and allied specialties and 6 from surgery. Mean duration from graduation was  $10.3 \pm 9.9$ . 77.7% agreed that CT scan is the preferred initial imaging modality, only 58.7% thought that fever should be aggressively controlled in initial stroke management. 55.5% would like to treat a BP of 180/100 mmHg in acute stroke. 31.6% agreed that patients be given low molecular weight heparin for anticoagulation. 41.66% think that Clopidogrel should be routinely combined with aspirin. Only 68.6% agreed for giving routine deep venous thrombosis prophylaxis. Preserved gag reflex was thought to be sufficient for preventing aspiration by 42.8% and 30.5% would consider using steroids in case cerebral edema develops in acute stroke patients. Conclusion: There are considerable gaps in knowledge and perceptions of physicians regarding early management of acute ischemic stroke when compared with evidence based guidelines. Existence of such an alarming pattern nationwide will require emergent measures at both under and post graduate level for improving the quality of care in acute ischemic stroke patients.

#### **10. Spinal astrocytoma: A rare intramedullary tumour.**

Mahrukh Ajmal, K. Ahmed Abbas, Asma Masroor, Shifa College of Medicine, Islamabad

Background: Intramedullary tumors arise within the substance of spinal cord and grow slowly by infiltration. The most common is low grade astrocytoma followed by ependymoma. The incidence of intramedullary tumors is 2 to 4% of all CNS tumors. We present an unusual case of thoracic spine intramedullary tumor in a young child. Case Report: A 6-year-old boy presented with 9 months history of gait disturbances and frequent falls. The weakness was more marked in left leg with a foot drop. Four months after onset of weakness, he developed urinary incontinence and constipation. He had no history of trauma or infection. On examination cranial nerves were normal. Motor system showed normal tone in all limbs, but decreased power of grade 4/5 in right leg, and 3/5 in left leg. Deep tendon reflexes were brisk in lower extremities with bilateral Babinski sign. Abdominal reflexes

were absent in lower abdomen with complete sensory loss below umbilicus (T-10 level). MRI of thoracic spine showed an intramedullary mass at T 8-9 levels with no significant enhancement, suspicious for tumor, most likely an astrocytoma (to be shown). Given the tricky location of the lesion, neurosurgical intervention was not possible, in particular in the absence of localizing techniques. The prognosis remains guarded and the child is likely to become wheelchair bound. Conclusion: This is a rare case of intramedullary tumor that remains untreated with an expected relentless course. Novel therapies should be evaluated to limit the disability of otherwise healthy children.

#### **11. Moya moya disease: A case report.** Noshina Sadaf, Arsalan Ahmad, Shifa International Hospital, Islamabad

Background: Moya moya disease (MMD) is a rare idiopathic disorder leading to irreversible blockage of major blood vessels to the brain. In Japanese it means puff of smoke referring to collateral circulation. It can lead to severe functional impairment or even death. Steno-occlusive areas are usually bilateral. Familial predisposition is 10% Adults experience hemorrhage more commonly whereas cerebral ischemic events are more frequent in children. Objective: Moya moya disease being a rare case in our part of the world should be considered in the differential diagnosis of young stroke. Here we report a case of young girl with moya moya disease. Case Report: A six years old girl presented with complaints of sudden right half weakness at the age of 1\_ year diagnosed as stroke. She improved slowly and started to talk. She stopped talking at the age of 4 years following a febrile illness. On examination she had drooling of saliva, was quiet and looked mentally dull. Examination of motor system showed that she was using left side more than right, deep tendon reflexes were hyperactive and planters were bilaterally flexor. Brain MRI and MRA showed non-visualization of bilateral anterior cerebral artery, middle cerebral artery and supraclinoid part of bilateral internal carotids, multiple collateral vessels in bilateral basal ganglia, thalami and old ischemic infarcts of variable ages involving cerebral hemispheres. Conclusion: High degree of suspicion is required to diagnose moya moya, especially in children with recurrent strokes. It is important to recognize and treat them early. MRA is better than other diagnostic modalities. Cerebral angiogram is the most definitive method of diagnosis.

#### **12. Fatal primary intraventricular hemorrhage in third trimester of pregnancy with rescue of baby.** Shaista Tamizuddin, Ismail A. Khatri, Mubashira Hashmi. Shifa international Hospitals Ltd., Islamabad, and Liaquat National Hospital, Karachi.

Background: Primary intraventricular (PIVH) hemorrhage in adults is rare. A number of risk factors have been associated with PIVH, including hypertension, arteriovenous malformations, aneurysms, and coagulopathies. Although pregnancy is not one of the risk factors for PIVH but there have been a few cases of PIVH in pregnancy. To the best of our knowledge, no case has been reported so far in which mother had PIVH and died before baby was rescued. Our case is one of the rare situations in which emergency Cesarean section resulted in survival of a baby from a dead mother's womb. Case History: A 29-year old woman, 30-week primigravida presented with sudden onset headache and vomiting for 24 hours. She had unremarkable past medical history. On arrival she was unconscious with Glasgow coma scale of 4/15 with decerebrate posturing. Her pupils were equal and reactive. There were no other localizing findings. Systemic examination was unremarkable. A CT scan of head without contrast showed paraventricular hemorrhage with severe hydrocephalus (to be shown). There was no parenchymal extension. Shortly afterwards, she went into cardiac arrest. Resuscitation was attempted and cardiac rhythm was restored in 10 minutes, however, she developed signs of brainstem death. The oxygenation was maintained with artificial mechanical ventilation and a live baby was delivered. Conclusion: This is an unusual case of fatal PIVH in pregnancy when mother suffered cardiac arrest and had no signs of brainstem function when the baby was rescued through an emergency Cesarean section.

**13. Episodic ataxia: A case report.** Javeria Ikram, Arsalan Ahmad, Ismail A. Khatri, Habib-ur-Rehman. Shifa International Hospital, Islamabad

Background: Episodic ataxia, a disorder affecting the cerebellum, is a rare inherited syndrome of intermittent ataxia. Affected individuals are normal between attacks but become ataxic under stressful conditions and with fatigue. Objective: To recognize ataxia with unusual etiologies. We present the first such case of cerebellar ataxia from Pakistan with a very unusual clinical presentation. Case Report: A 45 yr old man a known case of hypertension and ischemic heart disease booked for exercise tolerance test felt dizziness and vertigo for which procedure was abandoned. He again developed the same symptoms on exercise tolerance test 2 months later. He was having same symptoms for 04 yrs, that used to settle within minutes by themselves on stoppage of physical activity. For past 02 yrs he started to have difficulty in rapidly alternating quick movements. His examination revealed a subtle ataxic dysarthria, spontaneous horizontal resting nystagmus worsening with lateral gaze with fast component to left, inability to do rapid alternating movements, mild finger to nose

ataxia(left>right), inability to do tandem rombergs and falls to left. His routine lab examination was normal. Exercise tolerance test was negative for ischemia or arrhythmia. MRI of brain was unremarkable. Chromosome studies were not performed. He was provisionally diagnosed as having spinocerebellar ataxia type VI and was given a therapeutic trial of acetazolamide. Results: The patient responded to acetazolamide therapy thus confirming the provisional diagnosis. Conclusion: So far there is no definitive treatment of cerebellar ataxia but symptoms can be effectively relieved with acetazolamide

**14. Metastasis in meningioma: A case report.** Ayesha Idrees Abbasi, Muhammad Nadeem, Hasan Ali, Inayatullah Khan. Shifa International Hospital, Islamabad

Background: It is not uncommon for more than one tumor to occur in the same patient, metastasis from one tumor into another is very rare (tumor to tumor phenomenon). Metastasis can grow into meningioma, neurilemmomas and gliomas. It can even grow in the same location, from where an intracranial meningioma had been removed. Approximately 90 % of metastasis arise from breast and lung carcinomas. Cases from malignant melanoma and renal cell carcinoma have also been reported. A review of literature revealed more than 50 such cases to the best of our knowledge and search. Case Report: A 68 years old lady, presented with 4 months history of right hemiparesis and adult onset epilepsy. Her MRI brain showed a tumor in left parietal lobe which showed intense contrast enhancement with perilesional oedema. The most probable diagnosis was a convexity meningioma. Her detailed systemic review was unremarkable. Left parietal craniotomy and excision of tumor was carried out. It had a dural base and was removed in toto. Histopathology revealed meningioma with metastatic adenocarcinoma. The origin of metastasis was presumed to be from lungs. Her repeat chest x-ray showed an ill-defined opacity in left lower lobe. Her CT scan chest with contrast showed mass with speculated margins with multiple pathologically enlarged lymph nodes. FNAC proved it to be adenocarcinoma. Bone scan showed multiple metabolically active areas. The patient could survive only six months post-operatively despite radiotherapy and chemotherapy. Conclusion: A patient with typical features of meningioma can have widespread metastatic disease

**15. Percutaneous Retrogasserian Glycerol Rhizolysis in the management of trigeminal neuralgia.** Hasan Ali, Muhammad Nadeem, Ayesha Idrees Abbas, Inayatullah Khan. Shifa International Hospital, Islamabad

Background: Trigeminal neuralgia is sudden brief recurrent stabbing pain in the distribution of trigeminal nerve. Its

incidence is 1/1000,00 persons/ year. Percutaneous Retrogasserian Glycerol Rhizolysis (PRGR) has become a valuable surgical method for the treatment of intractable trigeminal neuralgia. Patients who are high risk for general anesthesia, those wishing to avoid surgery, those with MS and those with limited life expectancy (<5 years) are ideal candidates for PRGR. Objective: To evaluate the outcome and complications of PRGR in trigeminal neuralgia. Methods: The patients who were poor risk for anesthesia (e.g. old age) with side effect of medical treatment or with intractable pain despite medical treatment for atleast six months underwent PRGR. 41 patients were included in the study. The patients were followed up for relief of pain and other complications for at least six months. Results: The mean age of the patients was 59 years with male to female ratio of 1:1.6. The distribution of pain was most common in V2 territory. The duration of pain was more than one year in 80% of the patients. Prompt pain relief occurred in 34 patients (83%). Recurrence of pain occurred in 8(19%) patients. Six (14%) patients developed dysesthesia of face. Corneal sensations were affected in five (11%) patients but none developed corneal ulcers. Mastication was affected in two patients and one patient developed bradycardia, which responded to conservative treatment. None of the patients developed herpes or anesthesia of face. Conclusion: PRGR is a safe and effective procedure in relieving intractable trigeminal neuralgia in selected patients.

**16. Surgery in the neighborhood - Unusual cases in neurosurgery.** Syed Muhammad Raza Ali Shah, Ehtesham Ghani, Adil Aziz Khan, Noor Ahmed. Department of Neurosurgery, Pakistan Institute of Medical Sciences, Islamabad

Background: During life one may come across an experience that one has never had before and may not experience again. Objectives: To share the experience of unusual cases in neurosurgery. Methods: This study was done in the department of neurosurgery, Pakistan Institute of Medical Sciences, Islamabad. Unusual cases operated in neurosurgery were analyzed. Data were collected through clinical, radiological, operative and follow up records. Results: Four cases were studied including nasal glioma, intra-orbital fungal granuloma with intracranial extension, aural teratoma with intracranial extension, and intracranial epidural tuberculous abscess. The patient with teratoma expired after one year of surgery. Rest of the patients remained well on follow-up. Conclusion: Neurosurgeons should be ready to expect the unexpected. Such cases are encountered once in a lifetime.