Archives of Neurosurgery in Africa

The Official Journal of the

Nigerian Academy of Neurological Surgeons (NANS)

Publication Details

The Archives of Neurosurgery in Africa is a leading peer review Journal for scientific research pertaining to the field of neurosurgery. It is the official Journal of the Nigerian Academy of Neurological Surgeons (NANS) which publishes original research on several neurological conditions including surgical disorders of brain, spine, spinal cord and peripheral nerves. It is a biannual publication.

Aims and Scope

To communicate unique or unusual clinical cases encountered across all fields of neurosurgery.

To report individual results of new research, surgical approaches and techniques.

To complement the research findings and reviews published in Journals of Neurosurgery with clinical data and cases.

To promote greater exchange of information between the specialties and subspecialties related neurosurgery.

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Editorial

I am delighted that this second volume is coming out in a fairly good time despite many challenges; I thank all the people who has made it possible. The Editorial Team is really learning and adapting very fast.

This edition features important topics like the evaluation of accuracy of intraoperative targeting of deep brain nuclei for deep electrical stimulation. This is not a common clinical procedure in our environment. The author discusses the topic very effectively and raises the awareness of deep brain stimulation in sub-Saharan Africa.

Intracranial aneurysm is a very important topic in global neurosurgery but the exact incidence is not certain in sub-Saharan Africa. The article by *Adeolu et al* gives further insight into this topic.

The Editorial Team is determined to improve on the immediate gains of the Journal. We will continue to rely on the patronage, contributions and cooperation of everyone to achieve this goal of the Journal.

Augustine A. Adeolu
Editor-in-Chief

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Vol. 2 No. 1 January - June, 2021 **7-16**

Evaluation of the accuracy of intraoperative targeting of the subthalamic nucleus, the zona incerta and other deep brain nuclei for deep brain stimulation. A single centre retrospective cohort study

Misbahu H Ahmad
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ABSTRACT

Introduction: The clinical improvement achieved by deep brain stimulation (DBS) is largely dependent on the accuracy of electrode placements. This study evaluated the accuracy of targeting the deep brain nuclei of Subthalamic nucleus (STN), the Zona Incerta (ZI), the Globus Pallidus Interna (GPi) and the nucleus Ventralis Intermedius (Vim) of the thalamus using the Renishaw Neuroinspire novel software. The aim was to assess the accuracy of the intraoperative nuclear targeting and to estimate the mean range of error within which nuclear targeting is still acceptable.

Methods: The study was an audit of recorded imaging data on a sample of 55 patients who had DBS surgery at Southmead Hospital. The difference in the pre-surgical planned targeting of the nuclei and the final achieved location of the electrode in the cranio-caudal, coronal and sagittal axes was measured and this was defined as the error of placement. The error was recorded and subjected to statistical analysis. A p-value of ≤ 0.01 was considered statistically significant.

Results: The age of the patients ranged between 27 to 78 years. Parkinson's disease (PD) was the commonest indication for the DBS (69%), and the subthalamic nucleus (STN) was the most commonly targeted (48.2%).

The average error in targeting and lead placement on both sides was 0.36mm on x-axis, 1.08mm on y-axis and 0.95mm on z-axis. There was no statistically significant error in the electrode placements in the three axes

Conclusion: The results of this study showed high accuracy of the Renishaw Neuroinspire software in nuclear targeting also highlights the need for improvement in surgical techniques of electrode placement to achieve better accuracy.

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Recurrent spina bifida prevention and folic acid use

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ABSTRACT

Background: Spina bifida (SB) is a disabling congenital abnormality with folic acid (FA) deficiency recognized as a predisposing factor. Existing literature reports reduction in its incidence following peri-conception supplementation with Folic acid. However, there is limited literature on maternal subsequent pregnancy following SB occurrence with regards to awareness and usage of folic acid supplementation and dietary consumption of folate in our local environment.

Materials and Methods: A cross-sectional study on the awareness and practice of peri-conception FA supplementation among mothers with children affected with SB, in affected and subsequent pregnancy, was done. Data was obtained using an interviewer-administered questionnaire with analysis done with descriptive statistics.

Results: There were 12 respondents with majority of them (91.7%) less than 30 years old at the time of their first pregnancy and the mean of current age was 24.8 + 1.3 years. While just 2(16.7%) used FA in the pre-conception period in the SB pregnancy, only eight (66.7%) of the mothers used FA in the pre-conception period of the subsequent pregnancy despite increased awareness from 8(66.7%) to 12(100%). The dietary consumption of folate rich food was poor. Subsequent pregnancies were planned and there was no recurrence.

Conclusions: There was an improvement in the periconception usage of folic acid in mothers with a child previously affected with SB and there was no recurrence. National policies on folic acid supplementation and pre-conception care has been further validated.

Keywords:
Spina bifida, folic acid supplementation, dietary folate, pre-conception care

Introduction

SB is a neural tube defect (NTD) and the commonest disabling congenital malformation of the central nervous system.[1] It occurs during the 4th week of embryogenesis, when most mothers are unaware. The prevalence of SB is varied; ranges from 0.16 to 7 per 1000 live births.[2,3]

The etiology of SB is multi-factorial. Maternal folic acid deficiency has been identified as a major predisposing factor.[1,4] Other risk factors for SB include previously affected pregnancy, low level of education, fever or cold in early pregnancy, use of teratogenic medications (e.g anti-convulsants such as carbamazepine), cigarette smoke exposure, poor ventilation,[5] maternal

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Clinical and computerised tomographic findings in patients with clinically - diagnosed basal skull fractures

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ABSTRACT

Background: The diagnosis of a base of skull fracture remains clinical and may not be shown on skull radiographs and computerised tomography (CT) scans. It is often associated cause of cerebrospinal fluid (CSF) leakage which occurs in 2% of closed head injuries.

Aims: To determine the incidence of clinically - diagnosed basilar skull fractures, as well as the occurrence, with them, of CSF leakage and of bony fractures in the skull base on CT.

Methods: A retrospective analysis all cases of clinically - diagnosed fractures of the skull base from a computerised log of head - injured patients managed over a two-year period, July 2010 to June 2012 at our teaching hospital setting. Demographic, radiological and clinical data, as well as treatment outcomes, were documented.

Results: Clinical diagnoses of basal skull fractures were made in 141 of 483 (i.e. 29% of) head injuries. Males were 114 and females 27 (ratio 4:1). Most, 30%, occurred in the third decade of life and motor vehicle accidents were the cause in 78%. Fifty - five patients (39%) suffered severe, 29% moderate and 32% mild, head injuries. CT scan demonstrated basal fractures only in 20%. CSF rhinorrhoea and/otorrhoea occurred in 59% of patients, 90% of these closing spontaneously within one week. Complication rate (including meningitis, intracranial abscesses, cranial nerve palsies, etc), was 10.6%. Mortality was 9%, mostly associated with severe head injury and the presence of cerebral parenchymal injury on CT.

Conclusion: Many patients with serious head injuries frequently sustain other life - threatening systemic injuries, but it is important not to overlook basal skull fractures which (though not life - threatening and occurring mainly in less severe injuries) may result in adverse complications such as meningitis and intracranial abscesses.

Keywords:
Basal skull fractures; Clinical findings; Computerised tomography; CSF leakage; Complications.

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Are Intracranial Aneurysms Rare among Nigerian Africans?

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ABSTRACT

Background: Intracranial aneurysms have been reported to be rare in Africans. In this paper, we reviewed the experience with intracranial aneurysms in University College Hospital (UCH), Ibadan, Nigeria over a period of twelve years.

Study design: Retrospective analysis of all radiologically and autopsy - confirmed cases of intracranial aneurysm at the University College Hospital, Ibadan, Nigeria between January 1988 and December 1999.

Methodology: The clinical records and angiographic films of the patients were analysed. Demographic information as well as data on clinical presentation, types and location of aneurysms, and outcome of management in operated cases were obtained.

Results: There were a total of 17 patients, twelve female and five male. The highest incidence was in the 4th decade and the aneurysms were ruptured in sixteen patients. All the ante-mortem cases presented with subarachnoid haemorrhage. Posterior communicating artery aneurysm had the overall highest incidence (6/17) with all the cases presenting ante-mortem. Middle cerebral artery aneurysm had the highest incidence in the post-mortem cases. Five patients underwent surgery, four of them showing remarkable postoperative recovery. Two of the operated patients died, one in the immediate postoperative period; the other, one of the four with good postoperative recovery, died 9 months later from ventriculitis.

Conclusion: There is an apparent lower incidence of intracranial aneurysms in Ibadan, both in ante-mortem and post-mortem cases, compared to the Western world. It seems likely that the low incidence observed may not be truly representative. With increased awareness, availability of appropriate imaging facilities and unrestricted autopsy, a more accurate figure will be obtained.

Keywords:
Aneurysmal subarachnoid haemorrhage, Cerebrovascular accident, Vascular anomalies

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Archives of Neurosurgery in Africa ***CASE REPORTS***
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Dandy-Walker malformation with blindness in a pregnant woman: A case report

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ABSTRACT
Dandy-Walker Malformation (DWM) is an uncommon malformation of the central nervous system that usually presents in childhood with hydrocephalus and cerebellar symptoms. Adult presentation is very rare. This case describes a 24-year old pregnant woman with a previously undiagnosed DWM presenting with blindness. She had a small occipital encephalocele at birth for which she never presented. And she had a preterm delivery of a neonate also with an encephalocele. Brain MRI revealed the presence of the malformation. The clinical and radiological findings, as well as the treatment, are discussed.

Keywords:
Dandy-Walker Malformation, Hydrocephalus, Pregnancy, Blindness

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A Case of Spinal Neurofibromatosis Type I

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ABSTRACT

The presence of multiple bilateral spinal tumours and only few Neurofibromatosis 1 criteria has been classified as a subgroup of NF1, the spinal neurofibromatosis. About 13% of patients with spinal neurofibromas present with intradural and extradural "dumbbell formation". For cervical spinal neurofibromatosis the problems of nerve root preservation, vertebral artery control and spinal stability are encountered when addressing these tumours surgically; these require technical and ethical considerations. We report the case of a 31-year old man with spinal neurofibromatosis involving multiple eloquent nerve roots, and the challenges encountered in the surgical management of his condition.

Key words:

Spinal neurofibroma, spinal nerve sheath tumours, nerve root tumours, spinal stability

Introduction

Neurofibromatosis (NF) is a term that has been applied to a variety of related syndromes, characterized by neuroectodermal tumours arising within multiple organs and of autosomal dominant inheritance.[1] Of the at least 8 different clinical phenotypes of neurofibromatosis, only Neurofibromatosis type 1 (NF1) and Neurofibromatosis type 2 (NF2) are well-defined clinical entities for which genes have been identified.[2] NF1 is an autosomal dominant disorder with specific clinical features including hyperpigmented spots, multiple neurofibromas, Lisch nodules, skeletal abnormalities and tendency to develop neoplasms.[3]

Spinal neurofibromas can be identified in two different phenotypes of NF1 patients: (1) classical NF1 features with only one or few spinal tumours, and (2) multiple bilateral spinal tumours, but only few NF1 criteria. The latter has been classified as a subgroup of NF1, the spinal neurofibromatosis.[4] Of the spinal neurofibromas, 72% are intradural extramedullary, 14% are extradural, and 13% intradural and extradural "dumbbell tumours".[5]

Familial spinal neurofibromatosis is considered to be a distinct clinical form of neurofibromatosis; multiple symptomatic spinal neurofibromas are the main clinical finding in patients with familial spinal neurofibromatosis.[6]

Difficulties can be encountered in addressing patients with these spinal nerve sheath tumours surgically since they are characterized by multiple tumours, and resection raises the problems of nerve root preservation, vertebral

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INAUGURAL PRESIDENTIAL ADDRESS*

Dear friends, it is an absolute honor and a great pleasure to assume the presidency of the WFNS. The 2yr term of the WFNS Presidency means there is no time for learning on the job. I bring with me strong leadership experience, an understanding of all aspects of neurosurgery and executive talents in strategy, operations, administration and financial management. Since I attended my first WFNS in Amsterdam 1997, I have been heavily involved with the WFNS. The qualities I deliver are vision, integrity, action, commitment, competency, diplomacy, sincere friendship and humility. Most, if not all of you in the AC and EC know me personally, and some of us have worked together for over 20years.

I have developed wide networks across neurosurgery; these will be valuable in leading the WFNS. I have gained diverse administrative and executive experience in various professional organizations such as the AANS, CNS, Society of Neurological Surgeons, SUN, ACS, American Academy, RRC, American Board of NS. I am a surgeon, educator, scholar, scientist, administrator and a loyal friend. I have thought carefully about our vision, goals, and objectives, but I don't know everything, and I ask for everyone's ideas; but here are some things I have considered. We need more resources; we must grow the WFNS Endowment by philanthropy and industry relationships. We can enhance and monetize the WFNS brand. We should boost our educational initiatives with technology which will reduce costs and extend our reach. We can do better with operational efficiency, transparency, and unnecessary ceremony. We need to broaden volunteerism and participation from all societies. In developing countries, we must promote public-private partnerships to deploy equipment and devices and we need to support scholarship in developing countries. We should enhance trade between the developed and LMIC by leveraging populations, sharing data, and manpower. We can strengthen ties between the WFNS and WHO particularly the Emergency and Essential Surgery initiative. We must continue to develop Africa 100.

Let me briefly provide some insights into my background. I was born in West Africa, Lagos, Nigeria and attended a primary school established by the European expats. I attended a boarding school in Lagos Nigeria and I graduated from the University of Ibadan, the premier medical school in Nigeria. I did my internship at General Hospital, Lagos, Nigeria and then a year of national service in Nigeria. I received a Commonwealth Scholarship to the University of London, UK and then I emigrated to the US for training, I did my Neurosurgcal training and PhD neuroscience at Emory University, Atlanta, GA where I spent most of my career until my recent move to chair the Dept of Neurosurgery at the University of North Carolina in Chapel Hill, NC.

I am an active neurosurgeon focussing on pituitary surgery. I am recognized as one of the world's experts. I am also a scientist. I have over 15 years of experience as neurosurgical program director educating and mentoring residents, fellows and students. As Editor-in-Chief of NEUROSURGERY for 12yrs I have shaped the science of neurosurgery worldwide. I have been visiting professor all over the world. I am a global citizen. I am equally at home in Boston or Bangalore; Dubai or Dakar; Kinshasa or Kathmandu; Shanghai or Sydney; Vienna or Vancouver. I can talk with the Americans; I can work with the Portuguese. I have cheered with the Argentinians, I can smile with the British, I can drink with the Russians, I can mix with the Arabs, I have dined with the Italians, I have combined with the Chinese, I have celebrated with the French, I can play with the Australians, I can blend with the Africans, after all they are my brothers. I am a true global citizen.

We must collaborate – We will foster mutual respect - join hands - we all want the same things. I need your support to lead the WFNS, I look forward to working with everyone as we move the WFNS forward and advance the mission of global neurosurgery.

THANKS, OBRIGADO, MERCI, ARIGATO, GRAZIE, SPASIBO, GRACIAS!.

Nelson M Oyesiku, *MD, PhD, FACS*
Chapel Hill, NC, USA
President, WFNS 2021-2013

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