

Computed Tomography Assessment of the Brain in Patients with Severe Headache without Obvious Neurological Deficit in South East Nigeria.

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ABSTRACT

Background: Headache is a common neurological disorder in the community. As the number of CT scanners increase in poor nations, including Nigeria its use in evaluating patient with headache is becoming a viable option. In developed nations there are guidelines for neuroimaging in patients with headache, which are not available in Nigeria. We designed this study to assess the findings on CT in patients with chronic headache.

Methods: We reviewed retrospectively the written reports and CT scans of the brain performed between 2003-2009 at Memfys hospital for neurosurgery and 2006-2009 at the University of Nigeria Teaching Hospital Enugu.

Results: Hydrocephalus (7) -10%, tumours 8.6% and aneurysms 8.6% were the main findings. In those less than fifty years, tumours were the commonest finding, while aneurysms/AVM and infarcts were more in those older than 50 years. The commonest finding in females was aneurysm and in males tumours.

Conclusion: There is a high diagnostic yield of CT in patients with severe headache, without focal neurological deficit in South East Nigeria.

Key words: computed tomography, headaches,

lesions, are conflicting or lacking in developing countries⁵⁻⁷. In Africa poverty, lack of experienced neurologists, socio-cultural beliefs, late presentation and poor health seeking behavior make it difficult to apply the consensus guidelines applicable in developed countries^{8,9,10}

The advantages of CT in a resource poor setting include: cost, availability and relative affordability compared to MRI.

METHODS

We retrospectively reviewed the computed tomography (CT) register of all scans done at Memfys Hospital for Neurosurgery Enugu from June 2003-December 2009 and the University of Nigeria Teaching Hospital, Enugu from 2006-2009. Memfys Hospital for Neurosurgery is a referral neuroscience/neurosurgical center. All patients were referred for cranial CT on account of headache. Patients with secondary headache were excluded by reviewing the case histories. The same applied to those below the age of 18 and patients with incomplete history or biodata. Patients with primary headache with no neurological deficit were included in the study.

Reports were categorized as normal, hydrocephalus, tumours, infarction (acute or chronic), subdural hematoma, aneurysms/arterio-venous malformation, abscess, and hyperostosis. The study was reviewed and approved by the hospital's ethics committee. Statistical analysis was done using SPSS v 11.5

INTRODUCTION

Headache is a common neurological disorder in the community with a prevalence ranging from 50% to 99% in adults.¹⁻⁵ The use of neuroimaging in evaluating the headache patient has become an acceptable option in Nigeria because of increased number of CT scanners, but it has remained controversial because data on the effectiveness of this strategy in identifying patients with treatable

RESULTS

A total of 70 patients met the inclusion criteria 35 (50%) males and 35 (50%) females giving a male to female ratio of 1:1. The mean age was 40.80 ± 12.38 , mean age in males was 40.94 ± 12.07 and 40.74 ± 12.87 ($p=0.947$).

The main findings were hydrocephalus in 10%, tumours in 8.6% and aneurysms in 8.6%. (Table 1). In those less than fifty years of age, tumours were the commonest finding, while aneurysms/AVM and infarcts were more in those older than 50 years. The commonest finding in females was aneurysm and in males, tumours. (Table 1).

Table 1. Computed Tomography Findings in patients presenting with headache

	Males	Females	<50 years	>50 years
Normal	20(57.1)	17(48.6)	29(54.7)	8(47.1)
*HCPH	3(8.6)	4(11.4)	5(11.3)	2(11.8)
Tumors	4(11.4)	2(5.7)	6(14.3)	-
Aneurysm	1(2.9)	5(14.3)	3(8.6)	3(17.6)
Infarcts	3(8.6)	3(8.6)	3(5.7)	3(17.6)
Cysts	1(2.9)	2(5.7)	3(5.7)	-
#H-stosis	-	2(5.7)	1(1.9)	1(5.9)
**SDH	2(5.7)	-	2(3.8)	-
Abscess	1(2.9)	-	1(1.9)	-
Total	33(50)	35(50)	53(75.7)	17(24.3)

M=males, F=females
HCPH=Hydrocephalus
SDH=Subdural hematoma.
#H-stosis=hyperostosis

DISCUSSION

Studies show that about 3% of headache patient had CT scan, in developed countries but this is likely to be much less in poorer countries¹¹. Though CT scan is not recommended in every patient with chronic or acute onset of severe headache, laid down criteria¹⁰ which are easily applicable to the developed world may be difficult to implement in developing countries. Available studies that addressed this problem only focused on primary headaches, but distinguishing primary from secondary headaches is not always easy.¹² These earlier studies evaluated only primary headaches probably accounting for the small (0.4-1%)¹³ percentage of significant abnormalities detected

with CT.

This study revealed a high yield of CT in patients with headache without any focal deficit in a resource poor environment with a relatively high incidence of hydrocephalus (10%) - mostly ex vacuo and a few secondary to congenital conditions such as aqueductal stenosis, tumours (8.6%) and aneurysms/AVM (8.6%). our results differ from those of other workers who reported that the overall percentages of significant findings in patients with primary headaches was 2.4-2.8%^{7,13,14} (brain tumors, 0.8%; AVM/aneurysm, 0.3%; hydrocephalus, 0.3%; subdural hematoma, 0.2%; and strokes, including chronic ischemic processes, 1.2%). These were significantly lower than our result but the pattern and profiles of these findings were similar. The overall differences in the results may not only be due to differences in the population studied but may reflect the differences in the burden of these disorders in different communities.

The high yield in our study may be due to several factors. Firstly the group evaluated was likely to be heterogeneous including primary and secondary headaches disorders. Furthermore, although the patients were referred as primary headache disorders, this study suggests a high proportion of misdiagnosis of primary headaches disorders (52.9%). The possible reasons for this may include lack of qualified manpower at the primary and secondary healthcare facilities; poor implementation of strict referral protocols and self referrals. This study has all the limitations of retrospective studies. Clinical examination was performed by different doctors before referral so clinical clues to positive findings on CT may have been missed. The sensitivity of a comprehensive neurological examination may therefore have been missed.

It is noteworthy that 7 (8.6%) of the study population (21.2% of positive findings) were brain tumours. Though headaches are common in brain tumours (31-71%)^{isolated} headache is seen in 2-8% as the first and isolated clinical manifestation.^{15,16,17,18,19,20,21} All cases of tumour in our study were in patients less than 50 years and occurred more in men. In other studies age and sex had not been shown to correlate with the presence of headache in brain tumors.¹⁵

Headache associated with intracranial tumours are non-specific and may be progressive and occasionally meet the criteria for primary headaches¹⁵ hence may initially be evaluated as primary headache.

The relatively large proportion of infarcts may be explained by the high prevalence in our environment as also shown in the high rate of misdiagnosis.^{22,23} The proportion of aneurysm is surprising considering the reported low incidence of aneurysms in our locality.²⁴ The reason for this in our study and especially in the younger age group is not known but possible reasons may include the increasing availability of neuro-imaging, especially CT, in our environment enabling more accurate diagnosis. The diagnostic yield in those above 50 years (52.9%) supports the inclusion of age more than 50 as a red flag for CT scanning in chronic headaches. New-onset or worsening headaches in patients over the age of 50 years, is regarded as a 'red flag' and should always be investigated.²³

Surgically remediable conditions found in our study were 25 (35.7%) which make CT very useful in the evaluation of patients with chronic headache whose neurological examinations are normal or poorly done due to lack of trained personnel in resource poor regions of Africa.

Our conclusion is that CT has a high yield in patients with headaches and should be used routinely in patients with worsening chronic headaches especially in those above 50 years in our environment. In addition, there is a dire need of trained personnel to carry out thorough neurological examinations in order to screen out those patients who may benefit from neuro-imaging.

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