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Original Research

Evaluation of MRI finings in patients with chronic headache

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ABSTRACT:
Background: Brain magnetic resonance (MR) imaging studies provide multiple different imaging sequences in at least 2, and often 3, imaging planes. Neuroimaging should be performed, however, on those suspected of an underlying disorder based on the presence of additional symptoms and signs that do not fit the clinical diagnosis of primary headache. Hence; under the light of above-mentioned data, we planned the present study to assess the role of MRI scan in persons with chronic headache. **Materials & methods:** A total of 20 patients with chronic headache were enrolled. Complete demographic and clinical details of all the patients was obtained. Relevant history, clinical examination and routine investigations were done. Patients underwent MRI investigations. MR imaging findings were compiled as per proforma and subjected to analysis using SPSS software. **Results:** Mean age of the patients was 33.8 years. Out of 20 patients with chronic headache, 60 percent of the patients had migraine while 25 percent of the patients and 15 percent of the patients had tension type headache and clustered headache respectively. Significant MRI findings were found to be present in 25 percent of the patients. Among these 5 patients, four patients were of migraine while one patient was of tension type headache. Patient with tension type headache exhibited Hyperintensity on T2 and T2 Flair at Peri-ventricular and subcortical white matter. Patient with migraine exhibited hyperintensity at peri-ventricular white matter at T2 and Hyperintensity seen at Peri-ventricular white matter at T2 FLAIR. **Conclusion:** Careful assessment of patients with chronic headache should be done regularly.
Key words: Headache, Magnetic resonance imaging

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INTRODUCTION

Brain magnetic resonance (MR) imaging studies provide multiple different imaging sequences in at least 2, and often 3, imaging planes. The frontal lobes are located anteriorly and extend posteriorly to the central (rolandic) sulcus, which partitions the frontal and parietal lobes. Several techniques can be used to identify the central sulcus, a universal point of reference. On the axial T2-weighted images near the vertex, the central sulci can be seen as a pair of mirror image transverse grooves, with the motor cortex always located anterior to this sulcus. Headache is a common clinical feature in patients in the emergency room and in general neurology clinics. For physicians not experienced in headache disorders it might be difficult sometimes to decide in which patients neuroimaging is necessary to diagnose an underlying brain pathology and in which patients cerebral imaging is unnecessary. Headache is the most often reported neurological symptom. Nevertheless, knowledge of the prevalence of headache disorders, on which reiterations of the Global Burden of Disease Study depend, remains substantially incomplete.[1-3]

Because some potential aetiologies of headache may be life threatening or can badly affect neurological functions so careful assessment of a patient is very important to diagnose potentially morbid but treatable causes. Headache cause understandable concern not only on the part of the patient but also health care professional.[4, 5]

Neuroimaging should be performed, however, on those suspected of an underlying disorder based on the presence of additional symptoms and signs that do not fit the clinical diagnosis of primary headache (e.g.,

atypical headache patterns, a history of seizures, and/or focal neurological symptoms or signs). Clinical guideline pertaining to neurophysiological tests and neuroimaging procedures for non-acute headache recommend magnetic resonance imaging (MRI) for autonomic nervous headache.[6, 7]Hence; under the light of above-mentioned data, we planned the present study to assess the role of MRI scan in persons with chronic headache.

MATERIALS & METHODS

The present study included assessment of role of MRI scan in persons with chronic headache. A total of 20 patients with chronic headache were enrolled. Complete demographic and clinical details of all the patients was obtained. Relevant history, clinical examination and routine investigations were done. Patients underwent MRI investigations. MR imaging findings were compiled as per proforma and subjected to analysis using SPSS software.

RESULTS

Mean age of the patients was 33.8 years. Out of 20 patients with chronic headache, 60 percent of the patients had migraine while 25 percent of the patients and 15 percent of the patients had tension type headache and clustered headache respectively. Significant MRI findings were found to be present in 25 percent of the patients. Among these 5 patients, four patients were of migraine while one patient was of tension type headache.Patient with tension type headache exhibited Hyperintensity on T2 and T2 Flair at Peri-ventricular and subcortical white matter.Patient with migraine exhibited hyperintensity at peri-ventricular white matter at T2 and Hyperintensity seen at Peri-ventricular white matter at T2 FLAIR.

Table 1: Distribution of patients according to type of chronic headache

Chronic headache	Number of patients	Percentage of patients
Migraine	12	60
Tension type	5	25
Clustered headache	3	15
Total	20	100

Table 2: Distribution of patients according to MRI findings

Parameter	Presence of significant MRI findings		Absence of significant MRI findings		p- value
	Number of patients	Percentage of patients	Number of patients	Percentage of patients	
Patients with chronic headache	5	25	15	75	0.000 (Significant)

Table 3: MRI fining in patients with Migraine type of headache

Headache	T1	T2	T2 FLAIR	DWI	SWI
Migraine	-	Hyperintensity seen at Peri-ventricular white matter	Hyperintensity seen at Peri-ventricular white matter	-	-
Tension type headache	-	Hyperintensity at Peri-ventricular and subcortical white matter	Hyperintensity at Peri-ventricular and subcortical white matter	-	-

DISCUSSION

Migraine is a common disabling brain disorder. Headache accounts for 4.4% of all consultations in general practice, approximately 5% of all medical admissions to hospital, and approximately 20% of neurology outpatient consultations. Migraine affects over 20% of people at some point in their lives; epidemiological studies have shown that 4.5% of the population of Western Europe has headache on at least 15 days per month; global studies suggest that approximately 1% of the world's population may have chronic migraine. Chronic migraine imposes a substantial economic burden on society[8- 10]Mean age of the patients was 33.8 years. Out of 20 patients with chronic headache, 60 percent of the patients had migraine while 25 percent of the patients and 15 percent of the patients had tension type headache and clustered headache respectively. Significant MRI findings were found to be present in 25 percent of the patients. Among these 5 patients, four patients were of migraine while one patient was of tension type headache. Patient with tension type headache exhibited Hyperintensity on T2 and T2 Flair at Peri-ventricular and subcortical white matter. Patient with migraine exhibited hyperintensity at peri-ventricular white matter at T2 and Hyperintensity seen at Peri-ventricular white matter at T2 FLAIR.Ferbert Ainvestigated MRI pattern of a total of 45 patients suffering from classic migraine; 25 patients had been treated in our department for classic migraine over the past 2 years (group A), and 20 other patients investigated between 1976 and 1984 were reexamined for this study (group B). Thirty-two age- and roughly sex-matched healthy volunteers underwent magnetic resonance imaging and served as controls (group C). There was a trend for patients with classic migraine to

have more subcortical patchy lesions on T2 -weighted magnetic resonance imaging. In a comparison of our control subjects and patients with a history of >20 attacks of classic migraine taken from groups A and B, this difference in number of lesions was significant (/7=O.O2). The results suggest that patchy lesions in patients with classic migraine should be interpreted with particular caution before diagnosing a demyelinating disease since the lesions could be ischemic in origin.[10]Lewis DW assessed the utility of neuroimaging in the evaluation of children presenting with two of the most common forms of headache, migraine and chronic daily headache, and to determine the utility and pathological yield of neuroimaging in specific headache syndromes in children whose neurological examinations are normal. Twelve (11.2%) patients with migraine received an MRI, 2 (16.7%) of which were considered abnormal. Both of the abnormal findings were Chiari type I malformations. Eight (26.7%) of the patients with chronic daily headache had an MRI, 2 (25.0%) of which were abnormal. One of the abnormalities was a Chiari I malformation, and the other was an occult vascular malformation. The yield of neuroimaging in children with uncomplicated migraine and normal neurological examination was 3.7%. The yield in children with chronic daily headache and normal neurological examination was higher at 16.6%.[11]

CONCLUSION

Careful assessment of patients with chronic headache should be done regularly.

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