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Original Research

Evaluation of MRI findings in Migraine patients

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ABSTRACT:
Background: Since anomalies in blood vessels and nerves are most likely the underlying cause of migraine, it is known as a neurovascular headache. Thus, the current study was conducted to assess the results of MRI in migraine patients. **Materials & methods:** One hundred migraine patients in total were examined. Routine investigations, a clinical examination, and pertinent history were completed. MRI tests were performed on the patients. The patient was lying supine while imaging was done utilising a head coil. The results of the MR imaging were generated in accordance with the proforma and analysed using SPSS software. **Results:** Among patients with Migraine, significant findings on MRI were seen in 5 percent of the patients (1 patient). On MRI analysis, only one patient showed significant findings. It showed Hyperintensity seen at subcortical white matter on T2, Hyperintensity seen at subcortical white matter on T2 FLAIR in subcortical white matter. **Conclusion:** Migraine patient occasionally have abnormal MRI findings to explain their headaches.
Key words: Migraine, MRI

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INTRODUCTION

Headache is a common symptom with a wide variety of potential causes. More than 70% of the U.S. population are estimated to experience headaches[1,2], with the vast majority of headaches being caused by benign primary headache disorders and not significant pathological conditions.[3] Migraine is a severe, disabling brain condition that ranks 6th most disabling disorder globally according to the World Health Organization (WHO).[4,5] Migraine is the most frequent neurological disorder in adults, affecting up to 12% of the general population.[6] The annual costs of migraine – including lost productivity – are more than $19.6B in the U.S.[7] and €27B in Europe[8], making it a significant public health issue. Neuroimaging should be performed, however, on those suspected of having 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 guidelines pertaining to neurophysiological tests and neuroimaging procedures for non-acute headache recommend magnetic resonance imaging (MRI) for autonomic nervous headache.[9-11]Hence; the present study was undertaken for evaluating MRI findings in Migraine patients.

MATERIALS & METHODS

The goal of the current study was to assess MRI results in migraine sufferers. Twenty migraine cases in all were examined. Routine investigations, a clinical examination, and pertinent history were completed. MRI tests were performed on the patients. The patient was lying supine while imaging was done utilising a head coil. The results of the MR imaging were generated in accordance with the proforma and analysed using SPSS software.

RESULTS

40 percent of the patients were between the ages of 41 and 50. Patients who were between the ages of 31 and 40 and over 50 made approximately 25% and 10% of the patient population, respectively. The patients were 42.4 years old on average. Patients in the current study made up 75% of the population. 23 patients, or

23% of the migraine patients, had MRIs that revealed anything remarkable. Only one patient had notable results after MRI study. The subcortical white matter displayed hyperintensity seen at subcortical white matter on T2, hyperintensity seen at subcortical white matter on T2 FLAIR.

Table 1: Age-wise distribution of patients

Age group	Number of patients	Percentage of patients
Less than 20	10	10
20 to 30	15	15
31 to 40	25	25
41 to 50	40	40
More than 50	10	10
Total	100	100

Table 2: Distribution of patients with Migraine on the basis of MRI findings

Parameter	Presence of significant MRI findings		Absence of significant MRI findings	
	Number of patients	Percentage of patients	Number of patients	Percentage of patients
Patients with Migraine	23	23	77	77

DISCUSSION

Migraine is a genetically influenced complex disorder characterized by episodes of moderate-to-severe headache, most often unilateral and generally associated with nausea and increased sensitivity to light and sound. The word migraine is derived from the Greek word "hemikrania," later converted into Latin as "hemigranea." The French translation of such a term is "migraine."[12] Migraine is a common cause of disability and loss of work. Migraine attacks are complex brain events that unfold over hours to days in a recurrent matter. The most common type of migraine is without aura (75% of cases). While standard anatomic imaging appears to be of limited diagnostic value in migraine, recent studies have suggested significant cortical thinning may occur within regions within the pain matrix. Additionally, patients with migraine appear to be at higher risk for T2 hyperintense lesions, suggesting ischemic or degenerative processes may be involved. Early voxel based morphometry (VBM) studies focusing on gray matter thickness and density did not observe significant differences in cortical density in patients with migraine.[13] However, subsequent larger studies have noted significant reductions in gray matter density in cortical areas involved in pain processing[14,15], as well as an increase in gray matter density within the PAG in patients with visible T2 lesions. Interestingly, in patients with migraine with visual aura, studies have identified thicker visual cortex, presumably due to more frequent activation in these areas.

Hence; the present study was undertaken for evaluating MRI findings in Migraine patients.

In the current study, 40 percent of the patients were between the ages of 41 and 50. Patients who were between the ages of 31 and 40 and over 50 made approximately 25% and 10% of the patient population, respectively. The patients were 42.4 years old on average. Patients in the current study made up 75% of the population. 23 patients, or 23% of the migraine patients, had MRIs that revealed anything remarkable. Only one patient had notable results after MRI study. The subcortical white matter displayed hyperintensity seen at subcortical white matter on T2, hyperintensity seen at subcortical white matter on T2 FLAIR.

GS Rai et al[16]evaluated the findings of computed tomography (CT) and Magnetic Resonance Imaging (MRI) among patients presented with the chief complaint of headache and to compare the findings between two groups of patients.This retrospective observational study was carried out in 500 selected patients, who underwent CT or MRI scan of head in Peoples College of Medical Sciences and Research centre, Bhopal, MP during the period of 2 year in between Jan 2013 to Dec 2014.Siemens Somatom sensation 40 slice MDCT and Siemens magnetom 1.5T MRI scanner were used for imaging. Five hundred patients of 10 to 70 year age were selected for the study based on our criterions of selection.All 500 patients were divided in to two groups A and B based on presence or absence of red flag signs and CWC signs. Group A consists of 48 patients having one or more red flag or CWC signs and group B consists of 452 patients those don't have any above signs. 29 cases (60.4%) out of total 48 cases of group A is suffering from chronic headache as compared to 97 cases (21.5%) out of total 452 patients of group B is having positive findings (p-value<0.05).Out of 500 patients, only 29 cases (5.8%) revealed some form of brain parenchymal pathology whereas other associated findings were seen in 97 cases e.g. sinusitis in 58 (11.6%), bone related pathology in 26 (5.2%) and chronic suppurative otitis media (CSOM) in 13 (2.6%) patients. It was concluded that CT/MRI in patients without red flag or CWC sign yielded very low percentage of clinically significant positive findings in neuroimaging.

In the present study, on MRI analysis, 23 patients showed significant findings. It showed Hyperintensity seen at subcortical white matter on T2, Hyperintensity seen at subcortical white matter on T2 FLAIR in subcortical white matter. Lewis DW et al[17] 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%.

CONCLUSION

Migraine patient occasionally have abnormal MRI findings to explain their headaches.

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