

Evaluation of MRI Findings in Tension Type Headache Patients

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Abstract

Background: Tension-type headache (TTH) has a life-time prevalence of up to 78% in the general population. It is characterized by bilateral location, pressing/tightening quality and is typically of mild to moderate intensity. Hence; the present study was conducted for evaluation of MRI findings in tension type headache patients. **Subjects and Methods:** A total of 12 patients with tension type headache were enrolled. Complete demographic details of all the patients were recorded. 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. Chi-square test was used for assessment of level of significance. **Results:** Significant abnormal MRI findings were found to be present in 1 patient with tension type headache. The patients with significant MRI finding showed few small discrete T2 and T2 flair Hyperintensities in subcortical white matter. **Conclusion:** Patients with tension type headache should be viewed with suspicion and MRI should be done for excluding other potential etiologic factors.

Keywords: Magnetic resonance imaging, Tension type headache.

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Introduction

Headache is a common clinical feature in patients in the emergency room and in general neurology clinics. Chronic headache is one of the common presenting complaints in patients attending the out patient's department or emergency care of any hospital or general practitioner however, only about 10% of patients with recurrent headache have secondary cause. Non-acute (chronic) headache is defined as all headache syndromes lasting for at least four weeks.^[1-3]

From an Indian perspective, few studies describe the epidemiology of headache disorders. Previously, these disorders have been investigated only within larger neuroepidemiological surveys that have neither focused on headache nor used internationally accepted criteria for headache diagnoses.^[4]

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). Magnetic resonance imaging (MRI) is a medical imaging technique used to aid diagnosis but unlike CT it does not use ionizing radiation. Tension-type

headache (TTH) has a life-time prevalence of up to 78% in the general population. It is characterized by bilateral location, pressing/tightening quality and is typically of mild to moderate intensity.^[5,6]

Hence; the present study was conducted for evaluation of MRI findings in tension type headache patients.

Subjects and Methods

The present study was conducted in the department of Radiodiagnosis and it included assessment of MRI findings in tension type headache patients. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 12 patients with tension type headache were enrolled. Complete demographic details of all the patients were recorded.

Inclusion Criteria

- Patients with chief complaint of non-acute headache with diagnosis of tension type headache.
- Patient willing to give informed written consent to take part in the study.

Exclusion Criteria

- Patients of acute head injury and history of neurosurgery.
- Patients who refused to give the informed consent.

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. Chi-square test was used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

Results

In the present study, a total of 12 patients with tension type headache were analysed. Mean age of the patients of the present study was 38.4 years. 33.34 percent of the patients belonged to the age group of 31 to 40 years. 58.33 percent of the patients of the present study were females while the remaining were males.

In the present study, significant abnormal MRI findings were found to be present in 1 patient with tension type headache. The patients with significant MRI finding showed few small discrete T2 and T2 flair Hyperintensities in subcortical white matter.

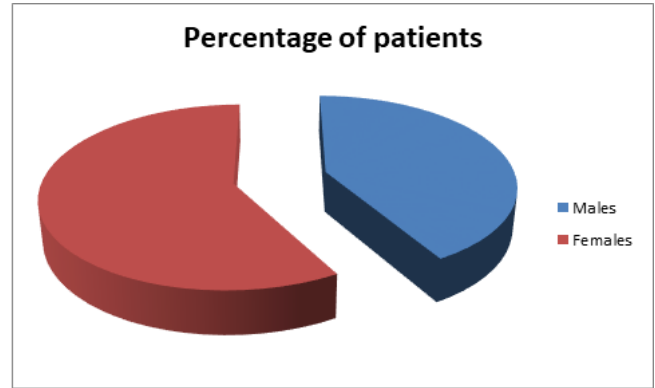


Figure 2: Gender-wise distribution of patients

afferent neurons from head and neck muscles is the most likely explanation for episodes of infrequent tension-type headache. Muscle tenderness and psychological tension are associated with and aggravate tension-type headache but are not clearly its cause. Abnormalities in central pain processing and generalised increased pain sensitivity are present in some patients with tension-type headache. Susceptibility to tension-type headache is influenced by genetic factors. [7-9]

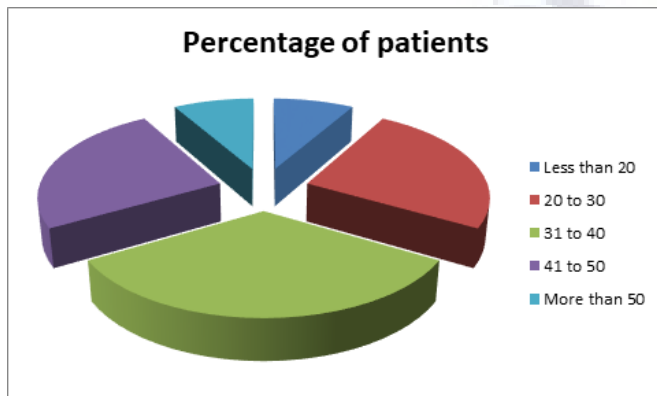


Figure 1: Age-wise distribution of patients

In the present study, a total of 12 patients with tension type headache were analysed. Mean age of the patients of the present study was 38.4 years. 33.34 percent of the patients belonged to the age group of 31 to 40 years. 58.33 percent of the patients of the present study were females while the remaining were males. Yılmaz Ü et al determined headache types and to evaluate the frequency and clinical significance of brain MRI abnormalities in children with headache. A total of 449 children (261 male and 188 female with a mean age of 11.16 ± 3.22 years) with headache were included into the study. The causes of headache were migraine in 247 (55.0%), tension-type in 133 (29.6%), secondary in 48 (10.7%), and unspecified headaches in 21 (4.7%) patients. Overall, 324 (72.2%) patients underwent cerebral MRI, which revealed abnormalities in 68 (21.0%) patients. Two (0.6%) patients had cerebral MRI abnormalities relevant to headache, including tumor and hydrocephalus each 1 (0.3%). Twenty-nine (8.9%) patients had incidental cerebral MRI abnormalities including 14 (4.3%) white-matter hyperintensities, 4 (1.2%) old infarcts, 3 (0.9%) Chiari malformations, arachnoid cysts and demyelinating lesions each 2 (0.6%), and subdural hygroma, fibrous dysplasia, pineal cyst and perivascular widening, each 1 (0.3%). Remaining 36 (11.1%) patients had extra-cerebral MRI abnormalities including 34 (10.5%) sinus disease, and 2 (0.6%) adenoid vegetation. Indications for brain MRI were atypical headache pattern or presence of neurologic abnormalities in 59 (18.2%) patients and parents' concerns in 265 (81.8%) patients. The

Discussion

Primary headache is the majority of headache patients presenting to a primary care practice. Approximately 0.1% of headaches are sinister. Among patients with migraine and a normal neurological examination, the prevalence of significant intracranial abnormalities on neuroimaging ranges from 0 to 3.1% and combining this data in a meta-analysis resulted in a prevalence of 0.18%. The underlying cause of tension-type headache is uncertain. Activation of hyperexcitable peripheral

Table 1: Tension type headache patients divided on the basis of MRI findings

Parameter	Presence of significant MRI findings		Absence of significant MRI findings			Total	
	Number of patients	Percentage of patients	Number of patients	Percentage of patients	Percentage of patients	Number of patients	Percentage of patients
Tension type	1	8.33	11	91.67		12	100
Chi-square value	102.33						
p-value	0.087						

Table 2: MRI findings in tension type headache patients

Number of patients	T1	T2	T2 FLAIR	DWI	SWI
1	-	Hyperintensities in subcortical white matter	Hyperintensities in subcortical white matter	-	-

rates of abnormal MRI findings were similar between these 2 groups. The most frequent cause of headache in children is migraine. Despite the high rate of imaging abnormalities, the yield of brain MRI was not contributory to the diagnostic and therapeutic approach.^[10]

In the present study, significant abnormal MRI findings were found to be present in 1 patient with tension type headache. The patients with significant MRI finding showed few small discrete T2 and T2 flair Hyperintensities in subcortical white matter. Gurkasa E et al described the findings on magnetic resonance imaging (MRI) in children with headache. A total of 478 patients (273 female, 205 male) were admitted with the complaint of headache. The types of headache were migraine in 218 (45.6%), tension-type in 159 (33.3%), secondary in 39 (8.2%) and unspecified headaches in 62 (13%) patients. Brain MRI was performed in 407 (85%) patients and revealed cerebral abnormalities in 128 (31.4%) patients; 5 patients had cerebral abnormalities relevant with headache, including tumors. Amongst the others 123 patients, the most common findings were 42 cases (10%) of nonspecific white matter abnormalities, 17 cases (4%) of enlarged perivascular spaces, 17 cases (4%) of arachnoid cyst, 16 cases (3.9%) of asymmetric ventricles, 12 cases (2.9%) with Chiari type I and cerebellar tonsillar ectopia. Also, 17 (4.1%) patients had extra-cerebral MRI abnormalities including sinusitis, mucosal thickening and retention cysts of sinuses. The contribution of brain MRI in the diagnosis and management of the children with headache was still low.^[11]

Conclusion

From the above results, the authors conclude that patients with tension type headache should be viewed with suspicion and

MRI should be done for excluding other potential etiologic factors.

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