Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr ICV 2018= 82.06 UGC approved journal no. 63854

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of prevalence of abnormal MRI findings in patients with Migraine, Cluster and tension type headache patients: An observational study

Ritu Dhawan[1], Mohit Mohindra[2]

[1]Associate professor, Department of Radio-Diagnosis, DMC & H, Punjab;
[2]Resident, Department of Neurosurgery, Medanta, New Delhi

ABSTRACT

Background: To make a responsible clinical and economic decision it is important to differentiate between a primary headache without underlying cerebral abnormality and secondary headaches, which are often associated with brain pathology. Hence; the present study was planned for assessing the prevalence of abnormal MRI findings in patients with Migraine, Cluster and tension type headache patients. **Materials & methods:** A total of 30 patients were analyzed. Out of these 30 patients, 10 patients were of migraine, 10 patients were of cluster headache and the remaining 10 patients were of tension type headache. Complete clinical history of all the patients was obtained. Clinical examination was done in all the patients and detailed medical and family history was obtained. MRI was done in all the patients and findings were recorded. **Results:** Significant abnormal MRI findings were found to be present in 9 patients. Therefore; overall prevalence of significant abnormal findings was 30 percent. Among migraine patients, abnormal MRI findings were found to be present in 4 patients. Among tension type headache patients, abnormal MRI findings were found to be present in 2 patients. Among cluster headache patients, abnormal MRI findings were found to be present in 3 patients. **Conclusion:** Significant proportion of abnormal findings is detectable in patients with primary headache, thereby emphasizing on the need of regular screening of the headache patients.

Key words: Cluster, Magnetic resonance imaging, Tension type headache

Received: 15 October 2018 Revised: 27 December 2018 Accepted: 28 December 2018

Corresponding author: Dr. Ritu Dhawan, Associate professor, Department of radio-diagnosis, DMC & H, Punjab, India

This article may be cited as: Dhawan R, Mohindra M. Assessment of prevalence of abnormal MRI findings in patients with Migraine, Cluster and tension type headache patients: An observational study. J Adv Med Dent Scie Res 2019;7(1): 170-172.

INTRODUCTION

Around 95% of the general population have experienced headache at some stage in their life with a 1-year prevalence of nearly one in two adults.1 Headache accounts for 1 in 10 general practitioner (GP) consultations, 1 in 3 neurology referrals and 1 in 5 of all acute medical admissions.[1-3]

Migraine is common, under-diagnosed, and treatable. It affects more than one in four women, less frequently in men, and is a leading cause of workplace absenteeism. Migraine has a peak incidence in the third decade of life, and declines with age. It can be present at the extremes of age.[4, 5]

To make a responsible clinical and economic decision it is important to differentiate between a primary headache without underlying cerebral abnormality and secondary headaches, which are often associated with brain pathology. However, in most cases when neuroimaging is performed in headache patients, especially when there are no further associated neurological symptoms, the results will be negative.[6]

Hence; the present study was planned for assessing the prevalence of abnormal MRI findings in patients with Migraine, Cluster and tension type headache patients.

MATERIALS & METHODS

The present study was conducted with the aim of assessing the prevalence of abnormal MRI findings in patients with Migraine, Cluster and tension type headache patients. A total of 30 patients were analyzed. Out of these 30 patients, 10 patients were of migraine, 10 patients were of cluster headache and the remaining 10 patients were of tension type headache. Complete clinical history of all the patients was obtained. Clinical examination was done in all the patients and detailed medical and family history was obtained. MRI was done

in all the patients and findings were recorded. Separate analysis of normal and abnormal findings was done. All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software. Univariate regression curve was used for assessment of level of significance.

Table 1: Demographic details

Parameter		Migraine	Cluster headache	Tension type headache
Mean age (years)		46.8	52.8	45.9
Gender	Males	6	7	6
	Females	4	3	4

Table 2: Prevalence of abnormal MRI findings

Abnormal MRI findings	Migraine	Cluster headache	Tension type headache	Total
Number of patients	4	2	3	9
Overall prevalence	13.33	6.67	10	30

RESULTS

A total of 40 patients were analyzed. Mean age of the patients with migraine, cluster headache and tension type headache was 46.8 years, 52.8 years and 45.9 years respectively. There were 6 males and 4 females in the migraine group, 7 males and 3 females in the tension type headache group and 6 males and 4 females in the cluster headache group. Overall significant abnormal MRI findings were found to be present in 9 patients. Therefore; overall prevalence of significant abnormal findings was 30 percent. Among migraine patients, abnormal MRI findings were found to be present in 4 patients. Among tension type headache patients, abnormal MRI findings were found to be present in 2 patients. Among cluster headache patients, abnormal MRI findings were found to be present in 3 patients.

DISCUSSION

Primary headache is a common condition; migraine causes much of the morbidity in this population, at great personal and economic cost. The decision to use MRI is a common dilemma facing clinicians, particularly as primary headache phenotypes can be triggered by secondary causes. Studies demonstrate that there is no appreciable difference in the frequency of pathological and incidental findings in common headache populations compared with the general community. Imaging is therefore not routinely required where a primary headache diagnosis can be made.[7- 9]Hence; the present study was planned for assessing the prevalence of abnormal MRI findings in patients with Migraine, Cluster and tension type headache patients.

In the present study, a total of 40 patients were analyzed. Mean age of the patients with migraine, cluster headache and tension type headache was 46.8 years, 52.8 years and 45.9 years respectively. There were 6 males and 4 females in the migraine group, 7 males and 3 females in the tension type headache group and 6 males and 4 females in the cluster headache group. Overall significant abnormal MRI findings were found to be present in 9 patients. Therefore; overall prevalence of significant abnormal findings was 30 percent. Bashir A et al evaluated the association between migraine without aura (MO) and migraine with aura (MA) and 3 types of structural brain abnormalities detected by MRI: white matter abnormalities (WMAs), infarct-like lesions (ILLs), and volumetric changes in gray and white matter (GM, WM) regions. PubMed as well as the reference lists of identified studies and reviews were used to identify potentially eligible studies through January 2013. Candidate studies were reviewed and eligible studies were abstracted. Pooled odds ratios (OR) and 95% confidence intervals (CI) were calculated for WMAs and ILLs. Six population-based and 13 clinic-based studies were identified. The studies suggested that structural brain changes, including WMAs, silent ILLs, and volumetric changes in GM and WM regions, were more common in migraineurs than in control groups. The results were strongest for MA. The meta-analysis of WMAs showed an association for MA but not for MO. The association of ILLs was greater for MA than for MO, but no association was found for MA and MO compared to controls. These data suggested that migraine may be a risk factor for structural changes in the brain.

In the present study, among migraine patients, abnormal MRI findings were found to be present in 4 patients. Among tension type headache patients, abnormal MRI findings were found to be present in 2 patients. Among cluster headache patients, abnormal MRI findings were found to be present in 3 patients.Toghae M et al determined the frequency of hyperintense foci in migraine patients and the relationship with migraine headache characteristics and cardiovascular risk factors. Ninety patients with migraine headache (70 without aura and 20 with aura) were enrolled and interviewed. Information on their headache (severity, frequency, and mean disease duration) and other related data was obtained by completing a clinical checklist. Subsequently, brain magnetic resonance imaging (MRI) was performed and each patient was then evaluated for hyperintense lesions. Of the 90 patients, 29 (32%) had silent hyperintense lesions on their MRI. The mean age of the patients with hyperintense foci was 41 years while those with no lesions was 33 years ($p<0.010$). Supratentorial hyperintense lesions represented the majority of lesions in the patients (n=46, 63%). Moreover, 56.3% of the lesions (n=41) were located within the right hemisphere. Cardiovascular risk factors such as smoking, serum cholesterol, oral contraceptive pills use, and body mass index (BMI) were not significantly different in these two groups ($p>0.050$). The lesions were found significantly more frequently in the patients who experienced chronic migraine ($p=0.032$). Their study added weight to the theory that disease duration has a key role in the formation of hyperintense brain lesions.[11]

CONCLUSION

From the above results, the authors conclude that significant proportion of abnormal findings are detectable in patients with primary headache, thereby emphasizing on the need of regular screening of the headache patients.

REFERENCES

1. Stovner L, Hagen K, Jensen R, et al. The global burden of headache: a documentation of headache prevalence and disability worldwide. Cephalalgia 2007; 27: 193–210.
2. Association of British Neurologist (ABN). Local adult neurology services for the next decade. Report of the working party. www.abn.org (2011, accessed June 2012).
3. Edwards KR, Norton J, Behnke M. Comparison of intravenous valproate versus intramuscular dihydroergotamine and metoclopramide for acute treatment of migraine headache. Headache. 2001;41(10):976–80.
4. Silberstein SD, et al. Acute migraine treatment with droperidol: A randomized, double-blind, placebo-controlled trial. Neurology. 2003;60(2):315–21.
5. Miner JR, et al. Droperidolvsprochlorperazine for benign headaches in the emergency department. AcadEmerg Med. 2001;8(9):873–9.
6. Weaver CS, et al. Droperidolvsprochlorperazine for the treatment of acute headache. J Emerg Med. 2004;26(2):145–50.
7. Mathew NT, et al. Intravenous valproate sodium (depacon) aborts migraine rapidly: a preliminary report. Headache. 2000;40(9):720–3.
8. Schwartz TH, Karpitskiy VV, Sohn RS. Intravenous valproate sodium in the treatment of daily headache. Headache. 2002;42(6):519–22.
9. Sender J, Bradford S, Watson D, et al. Setting up a specialist headache clinic in primary care: general practitioners with a special interest in headache. Headache Care 2004; 1: 165–171
10. Bashir A, Lipton RB, Ashina S, Ashina M. Migraine and structural changes in the brain: a systematic review and meta-analysis. Neurology. 2013;81(14):1260–1268. doi:10.1212/WNL.0b013e3182a6cb32
11. Toghae M1, Rahimian E2, Abdollahi M3, Shoar S4, Naderan M5. The Prevalence of Magnetic Resonance Imaging Hyperintensity in Migraine Patients and Its Association with Migraine Headache Characteristics and Cardiovascular Risk Factors. Oman Med J. 2015 May;30(3):203-7. doi: 10.5001/omj.2015.42.