

Role of Computed Tomography in detecting the cause of Headache in Patients Admitted to a Tertiary Care Hospital in South Odisha

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ABSTRACT

Background: To determine the etiology of headache in patients undergoing computed tomography (CT) scan of brain both with or without neurologic abnormality in South Odisha. **Methods:** A prospective study of six months duration was carried out at the M. K. C. G Medical College & hospital. It included 200 patients who underwent a brain CT for headache. CT findings of patients were analyzed. **Results:** The total number of our patients was 200. These etiologies were stroke (15%), followed by tumor(11%), sinusitis(7.5%), trauma (7.5%), abscesses(5%) and encephalitis (4%). **Conclusions:** CT of brain has revealed in 62.5% of cases as normal and detected the various causes in rest of cases.

Keywords: Brain CT scan, Headache, South Odisha

1

INTRODUCTION

Headache is the most common complain of most of the patients presenting to Medicine and Neuromedicine department. It may lead to derangement of the normal day-to-day activity with alteration of the mental health of the patients.^[1] Majority of the patients with headache does not require any imaging, especially if not accompanied with any neurological deficit.^[2,3] Neuroimaging is useful in case of recent onset headache and headache with progressive worsening or with change in headache pattern or associated with epilepsy, change in personality or with history of trauma. It is also helpful in presence of red flag signs (changes in headache pattern, new onset headache in people above 50 years of age, associated with systemic illness or personality change, raised intracranial pressure, early morning headache, or headache worsening with coughing, sneezing or straining).^[4] In recent years, there is increasing trend of recommending neuroimaging, in all age group, in spite of normal neurologic baseline examination to exclude the possibility of intracranial mass.^[5]

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MATERIALS & METHODS

This is a descriptive prospective study carried out over a period of six months (Jan 2019 to June 2019) at the M. K. C. G Medical College & hospital. It focused on all patients who underwent a head CT scan for headache.

The scanning was performed using a brand HITACHI ECLOS 16 slices CT scanner. All patients underwent helical acquisition without contrast medium injection. According to the context (notion of fever or combined hormonal taking or suspect image on the spontaneous contrast acquisition), another complementary acquisition was performed after iodinated contrast medium IV injection. Epidemiological and clinical data were obtained through the interview of patients with a survey sheet.

RESULTS

The total number of patients was 200. There was a predominance with 60% (n = 120) of women against 40% men (n = 80). The average age was 48 years, with extremes ranging from 22 to 74 years. The associated signs were motor deficit (25 cases that is 12.5%) and fever (20 cases that is 10%). In 60% of cases there were no associated clinical symptoms. In 62.5% (n = 120) of cases CT findings were normal [Table 1]. CT revealed in 37.5% (n = 80) of cases a cause for headache. These causes were dominated by stroke (15%), followed by tumor (11%), sinusitis

(7.5%), abscesses (5%) and encephalitis (4%) and trauma (7.5%). Strokes were ischemic in 24 cases, hemorrhagic in 5 cases and venous in 1 case (thrombophlebitis).

Table 1: CT findings of patients

CT findings	No of patients	Percentage (%)
Tumor	22	11
Trauma	15	7.5
Stroke	30	15
Sinusitis	15	7.5
Encephalitis	8	4
Abscess	10	5
Normal	125	62.5
Total	200	

DISCUSSION

In our investigated group women were more affected by headache than men. Thus 120 patients (60%) were females and 80 patients (40%) males. The female preponderance of headache observed in our study is in agreement with the literature data. In a retrospective study of 100 records of patients admitted to a medical emergency department in the United States, 74% of patients were women.^[6] In the study of Subeede women were most affected by headache with a prevalence between 16-88% for women and 9-69% for men.^[7]

In our study the average age of patients was 48 years with extremes ranging from 22 years to 74 years. Our results differ from those of Peterlin BR who found a predominance of the age group between 35 and 40 years.^[8] The difference in age between this study and the study by Jain P could be explained by the economical and educational differences in both countries.^[9] According to Gilbert,^[10] symptomatic headache of intracranial lesions is rare; it requires explorations because certain conditions incriminated put at stake the prognosis for life. The first step of the diagnosis is clinical; it specifies the characteristics of pain and accompanying symptoms. Additional tests are required secondly in case of new-onset headache, change in the characteristics of the evolution of known headache, worsening of the intensity or increase in the frequency of known cephalalgic seizures or headache associated with other clinical signs. In our study, the associated signs were motor deficits (25 cases that is 12.5%) and fever (20 cases that is 10%). In 60% of cases there were no associated signs. Despite this, in more than 54% of cases the CT was normal. This demonstrates the high incidence of primary headache in accordance with the literature.

The role of neuroimaging in headache is recognized by all. But its systematic use in the presence of headache is controversial. Our study, although prospective has not considered the clinical criteria of the feasibility or not of neuroimaging. All examinations requested for headache whatever the motive have been taken into account. These

examinations consisted of the performance of a head CT scan without and after iodinated contrast medium IV-injection according to the case. No other neuroimaging was performed in our study. MRI, considered as the best diagnostic means of headaches was not possible for two reasons. Firstly, it is a costly examination and it is little available. Then in our country we only have MRI of low fields; which limits its diagnostic efficacy. Secondly, we can't communicate directly with the attending physician. We can do it only by a written report in which we have sometimes suggested MRI in addition. Patients with normal headache and with a normal scanner are mostly ambulant.

In our study, 129 cephalalgic patients have had CT. Sixty examinations were abnormal including 25 cases (19%) that were strokes. Soma SS,^[11] in a similar study had found 86 normal examinations and 78 abnormal examinations including 36 cases (22%) of lesions that were strokes. Strokes were ischemic in 25 cases, hemorrhagic in 5 cases and venous in 1 case (thrombophlebitis).

The other etiologies of headache demonstrated on CT scan in our study were sinusitis (9.3%), abscess and encephalitis (7.8%) and trauma (5.4%). In a study carried out by Detsky in a Danish population,^[12] infectious headache accounted for 63% of secondary headache and was the most common. ENT headache accounted for 15%; Traumatic headache 4%; cluster headache 1% and finally non-vascular headache 0.5%. According to Lester,^[13] toxoplasmosis on HIV comes in the 2nd place of causes of headache in Burkina Faso (17%) after stroke. Sometimes, despite the absence of red flag sign, CT scan of head is requested to relieve the anxiety of the patients and their relatives. However, this increases the radiation dose to the patients, especially in pediatrics population. Hence, the use of CT scan has to be balanced against the radiation dose. Although CT scan is very useful for the evaluation, it should never be allowed to replace the proper clinical history taking and detailed clinical examination.

CONCLUSION

Headache is a common clinical feature in neurological patients which require neuroimaging as part of their diagnostic workup. These patients do not have a higher rate of relevant cerebral pathology than anyone else in the general population. Sometimes, however, it might be reasonable to perform neuroimaging in patients frightened that they are suffering from severe illness or who present with uncommon clinical features. Distinct 'red flags' in clinical neurological examination point to a secondary cause of the headache and require further neuroimaging to detect treatable causes and severe disease of this secondary headache.

REFERENCES

1. Clarke CR. Neurological disease. In: Kumar P, Clark M, editors. Clinical Medicine. 6th ed. Edinburgh, UK: Elsevier Limited; 2005. p. 1-174.
2. Frishberg BM. The utility of neuroimaging in the evaluation of headache in patients with normal neurologic examinations. Neurology 1994;44:1191-7.
3. Report of the Quality Standards Subcommittee of the American Academy of Neurology. Practice Parameter: The utility of neuroimaging in the evaluation of headache in patients with normal neurological examinations (summary statement). Neurology 1994;44:1353-4.
4. Lester MS, Liu BP. Imaging in the evaluation of headache. Med Clin N Am 2013;97:243-65.
5. Headaches: Diagnosis and Management of Headaches in Young People and Adults, NICE Clinical Guideline, September; 2012.
6. Frishberg BM, Rosenberg JH, Matchar DB, McCrory DC, Pietrzak MP, Rozen TD, et al. Evidence-based guideline in the primary care setting: Neuroimaging in patients with nonacute headache. U.S. Headache Consortium Web site. Available from: <http://www.aan.com>.
7. Subedee A. Evaluation of chronic headache by computed tomography: A retrospective study. J Nobel Med Coll 2012;1:57-63.
8. Peterlin BL, Gupta S, Ward TN, Macgregor A. Sex matters: Evaluating sex and gender in migraine and headache research. Headache 2011;51:839-42.
9. Jain AP, Chauhan B, Bhat AD. Sociodemographic and clinical profile of headache-a rural hospital based study. J Indian Acad Clin Med 2007;8:26-8
10. Gilbert JW, Johnson KM, Larkin GL, Moore CL. Atraumatic headache in US emergency departments: recent trends in CT/MRI utilisation and factors associated with severe intracranial pathology. Emerg Med J 2012 Jul; 29(7): 576-81
11. Soma SS, Prakash D, Ling Z. Analysis of headache management in a busy emergency room in the United States. Headache 2008; 48: 931-938
12. Detsky ME, McDonald DR, Baerlocher MO, Tomlinson GA, McCrory DC, Booth CM. Does the patient with headache have a migraine or need neuroimaging ? JAMA 2006; 296: 1274-1283
13. Lester M, et al. Imaging in the evaluation of headache. Med Clin N Am 2013; 97: 243-65.

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