



Study of Patients Presenting with Headache with Red Flag Signs and Its Relation with Neuroimaging

Authors

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Abstract

Introduction: Headache is one of the most universal medical symptoms and reasons for neurological consultation. The study was designed to evaluate the patients presenting with headache with Red flag signs and to analyze the cause by neuroimaging

Material and Methods: This study was observational study of 100 patients designed to evaluate the patients presenting with headache with Red flag signs and to analyze the cause of by neuroimaging. All patients with headache with red flag signs and who underwent Neuroimaging were included in study.

Observation: Female preponderance was noted, with female to male ratio of 1.5:1. Most of the patients belong to age group of 41-60 years. 62% of the patients presenting with red flag signs had significant neuroimaging findings. Most common cause of secondary headache in patients with red flag signs was found to be haemorrhage followed by Tubercular meningitis. Abnormal neurological examination and headache associated with fever/neck stiffness have statistically significant correlation with abnormal neuroimaging.

Conclusion: Red Flag Signs are considered as an important tool for the need of neuroimaging in patients presenting with secondary headache. Of all the Red Flag signs "Headache associated with abnormal neurological examination" and "headache associated with neck stiffness/fever" have the most significant association with abnormal neuroimaging although other red flag signs are equally valuable.

Keywords: Headache, red flag signs, neuroimaging, haemorrhage, thunderclap headache, meningitis, neck stiffness.

Introduction

Headache is one of the most universal medical symptoms and reasons for neurologic consultation. Although the preponderance of headache disorders are benign, clinicians are faced with the decisive task of make out benign variants from conditions that menace life and neurologic function. Sometime it is very tricky to doctor to discriminate primary from secondary headache. Headache has countless reason including tumors, brain atrophy, and intra-cerebral hemorrhage. It can also be acute or chronic. Headache is one of

the most common diseases that affect the humans. 76% of women and 57% of men report at least one significant headache per month, and more than 90% experience at least one noteworthy headache in their lifetime.

In India, previous neuroepidemiological surveys have identified headache disorders as among the most common neurological conditions, but estimates of prevalence have been wide-ranging: From as low as 0.2% to a high of 58%. Methodological differences and inconsistencies between studies have contributed to this wide

variation, which is so great as to be wholly uninformative. Though population-based analysis is a true indicator of the prevalence and characteristics of headache, hospital-based studies which are able to include only those patients who feel the necessity of seeking medical help reflect the state of affairs of moderate-to severe headaches. This work was designed to study the profile of headache of patients with red flag signs and its relation with neuroimaging findings attending Hamidia hospital located in Bhopal (M.P).

Investigation should be avoided in principle if it does not lead to a change in management or it is unlikely to reveal a relevant abnormality. Occasionally, neuroimaging may be required on an individual basis if a patient is disabled by fear of serious pathology. Neuroimaging is not indicated in patients with a clear history of migraine, without red flag features for potential secondary headache, and a normal neurological examination. Clinicians requesting neuroimaging should be aware that both MRI and CT can identify incidental neurological abnormalities which may result in patient anxiety as well as practical and ethical dilemmas with regard to management. Brain CT should be performed in patients with headache who have unexplained abnormal neurological signs, unless the clinical history suggests MRI is indicated. Headaches are investigated differently depending on the cause. For imaging investigations CT scan and MRI have proved to be useful when the neurological physical examination is abnormal. For the remaining types of headaches diagnosis can solely be based on the clinical conclusion.

Objectives

1. To study clinical profile of patients presenting with headache with Red Flag signs.
2. To study relation of different Red Flag signs with neuroimaging

Material and Method

This study is an observational study designed to evaluate relation between Red Flag signs of headache and neuroimaging. All The patients who presented to Medicine department hamidia hospital, Bhopal with headache were evaluated and patients fulfilling the inclusion and exclusion criteria (listed below) were enrolled in the study. Study began in March 2015 and ended in May 2016. A convenient sampling technique was used whereby; all the patients who presented with headache with red flag sign were included a short interview was conducted to obtain basic information and clinical history of patients .The following data were used to evaluate study population. Age , Gender, Complete blood picture, liver function test, Renal function test, Fundus examination ,Neuroimaging (CT / MRI).

Inclusion Criteria

- New or changed headache > 50 years age.
- Thunderclap onset of headache.
- Change in headache pattern or frequency.
- Headache with abnormal neurological examination.
- Headache awakening patient up.
- Headache precipitated by exertion or valsalva.
- Headache with neck stiffness/ fever.

Exclusion Criteria

- Old case cerebrovascular accident.
- Patient with head injury.
- Patients with migraine.
- Patients with psycho somatic disorder.

Data Analysis

Chi square test was used for calculating p values. Statistical analysis was done difference was considered statistically significant if $P < 0.05$.level.

SPSS software was used for statistical analysis

Results

Gender Distribution of Patients

Table 1

	Male	Female	Total
Total patients	39	61	100

Study population was a total of 100 patients, there were more female 61 (61%) than male 39 (39%). Female to male ratio is 1.5:1.

Percentage of normal and abnormal neuroimaging in patients presenting with headache with Red Flag signs.

Table 2

Neuroimaging Findings	Total (%) (N=100)
Normal	38 (38%)
Abnormal	62 (62%)
Total	100 (100.0%)

Total number of participants were 100 .Out of 100 neuroimaging (CT/MRI) done 62% showed to have significant findings .

Percentage distribution of Neuroimaging (CT/MRI) finding

Table 3

Distribution Of neuroimaging (CT/MRI) Scan	
	No. Of Patient (%)
Normal	38 (38%)
Hemorrhage	16(16%)
Tubercular Meningitis	13 (13%)
Bacterial Meningitis	7 (7%)
Infarction	9 (9%)
Cerebral Venous Thrombosis	7 (7%)
ICSOL	8(8%)
Viral Meningitis	2(2%)

Most common neuroimaging finding in patients with RED FLAG signs with headache was normal neuroimaging followed by haemorrhage .Out of total 100 patients 38 had no abnormality detected on neuroimaging and haemorrhage was the most common abnormal finding in study patients ,which was seen in a total of 16 patients .

Percentage distribution of red flag signs by neuroimaging findings

Table 4

Disease	No. of Patients	Normal	P value
New onset headache >50 yr age	13	9	0.5200
Thunderclap headache	12	3	0.1481
Abnormal neurological examination	23	5	0.0434
Headache associated with Neck stiffness /fever	23	2	0.0416
Headache Precipitated by exertion or valsava	16	9	0.0625
Headache Awakening the patient up	4	3	0.0833
Change in pattern or frequency of Headache	17	9	0.0588

Most common RED FLAG sign found in study subjects was, “Headache with abnormal neurological examination” and “headache associated with fever and neckstiffness which was seen in 23 patients each.

Conclusion

Headache is a common presenting complaint in neurological patients. Red Flag Signs though numerous are considered an important tool for the need of neuroimaging in patients with secondary headache. Majority of patients with secondary headache are female and belong to middle age group. Majority of patients with Red flag signs have abnormal neuroimaging. Of all the Red Flag signs “Headache associated with abnormal neurological examination” and “headache associated with neck stiffness /fever” have the most significant association with abnormal neuroimaging finding, although other red flag signs are equally valuable. Thus any patient with headache associated with red flag signs should be considered for neuroimaging urgently.

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