ORIGINAL ARTICLE

Headache: A useful clinical feature in detecting serious underlying cause

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ABSTRACT

Objective: To examine the utility of clinical features in detecting serious underlying causes of headache in patients presenting to an emergency room.

Study Design: Descriptive Observational Study.

Place and Duration of Study: Pakistan Railway Hospital spanning over a period of one year from July 2010 to June 2011.

Materials and Methods: Medical records of the patients attending the Emergency Room with headache as the major complaint were studied.

Results: 312 patients presented to ER with a complaint of headache. Of these 7.7% (n=24) had malignant headache and 92.3% (n=288) had benign headache. One hundred and ninety six patients (62.8%) were women and 116(37.2%) were men. In males there were 86.2% patients with benign headache and 13.8% with malignant headache. While in females 94.9% had benign and 4.1% malignant headache. Ninety percent of patients had altered consciousness at presentation proved to have malignant cause for their headache. This figure was 91% for limb weakness, 100% for papillary and gaze abnormalities, 89% for extensor plantar response, and 85% each for papilledema and neck rigidity.

Conclusions: Females present at younger age with headache and tend to have benign than malignant headache in majority of cases. Males present at relatively older age and tend to have malignant than benign headache in majority of cases**.** Younger patients presenting with headache usually have benign and elderly patients usually have malignant illness as the cause of their headache. With a good history and thorough physical examination Imaging like CT Scan and MRI can be avoided.

Key Words: *Benign headache, Malignant headache, Neck rigidity.*

Introduction

Most of the patients who visit the emergency department for headache prove to have a benign cause for their complaint but physician has to rule out an unexpected and potentially serious disease such as subarachnoid hemorrhage.[1] A thoughtful approach complemented by the judicious selection of tests is compatible with that goal as well as achieving the desired outcome of accurate diagnosis and relief of pain.[2]

There is a tendency to order expensive investigations in the emergency department in the fear of missing a diagnosis. The National Hospital Ambulatory Medical Care Survey for the years 19922001 revealed that in USA of the total of patients who underwent neuro imaging only 5.5% received a pathological diagnosis.[3]

Assessing the pretest probability with detailed history and physical examination will help reducing the cost of expensive tests unduly ordered. [4] A thorough neurological assessment is not only necessary for a correct diagnosis but it also enables the clinician to identify the seriousness of the problem by distinguishing between primary and secondary headaches and to make a definite plan for the additional workup for the safe and effective management of patients with headache.[5]

In 2008 the Policy of the American College of Emergency Physicians on evaluation and management of adult patients presenting to the emergency department with acute non-traumatic headache was revised. In this policy there are recommendations for imaging in all headaches with abnormal neurological examination, new onset severe headache, HIV patients presenting with severe headache and patients more than 50

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years of age presenting with new type of severe headache.[6]

The purpose of this study is to highlight the importance of clinical examination in the evaluation of a patient with headache in emergency department. A lot of work has been done in the west in this regard to help an ER physician in quick evaluation of a patient with headache with least possibility of missing a diagnosis without ordering too many investigations. Such studies are lacking in our setting.

Material and Methods

Medical records of 312 patients, who had presented to ER with headache as their major complaint during the study period, were studied. A Performa was filled depicting the details about age, sex, occupation, marital status, history of the headache with special emphasis on duration, onset, mode of presentation, location, associated features like fever, aura, impairment of consciousness, nasal congestion, lacrimation, visual disturbances, photophobia, irritability, nausea, vomiting, vertigo, dizziness etc. There were also details about physical examination including pulse, BP, temperature, general physical examination, abnormal neurological findings like limb weakness, altered mental status, brisk deep tendon reflexes, extensor plantar responses, pupillary abnormalities, conjugate gaze deviation, signs of meningeal irritation and other details in examination of the nervous system. A note was also made of the investigation carried out in the ER and the final diagnosis at the time of discharge.

We divided our patients into two groups:

Group 1: Comprised those patients who had spent less than two hours in the ER.

Group 2: Comprised those patients who had spent more than two hours in the ER and underwent thorough clinical examination and investigations.

We then studied the charts for follow-up in OPD for the next six months and made a note of the final diagnosis after six months of follow-up was made.

Inclusion Criteria:

All the patients attending the ER whose major complaint was headache.

Exclusion criteria:

- Patients with vague complaints.
- Headache being the part of illness like flue or febrile illness.
- Patient discharged immediately or triaged to OPD and not retained in ER.

Results

Three hundred and twelve patients presented to ER with a complaint of headache. Of these 196(62.8%) were women and 116(37.2%) were men. Most patients 217(70.2%) spent less than 2 hours in the ER. 95 patients (29.8%) stayed for more than 2 hours.

Of 312 patients 24 (7.7%) had malignant headache and 288 (92.3%) had benign headache.

The mean age of presentation in males was 41.43 years (range 3-78years), while the mean age in females was 33.17 years (range 2-75 years). In males there were 86.2% (n=100) patients with benign headache and 13.8% (n=16) with malignant headache while in females 94.9% (n=188) had benign and 4.1% (n=8) malignant headache.

There were 245 patients in the age group between 11-50 years. Out of these only 3% (n=7) patients had malignant headache while 97% patients (n=238) had benign headache. There were 32 patients between the age of 51 and 60 years and amongst them 87.5% (n=28) had benign headache and 12.5% (n= 4) had malignant headache.

There were 21 patients between the age of 61 and 70 years and amongst them 12.5% (n= 4) had malignant headache and 66.66% (n=14) had benign headache.

At extremes of ages there were more patients

with malignant than with benign headache. Below age 10 years there were 9 patients, 33.3% (n=3) who had malignant headache while above 71 years of age there were 5 patients and 66.66% (n=3) had malignant headache

Out of 196 females who presented to ER with headache 122 (62%) had severe headache and 96 (49%) had a history of recurrent attacks with similar pattern in the past.

There was sudden onset of severe headache in 176 patients but out of these only 18 (10.2%) had proved to have a serious cause to their headache. Photophobia was an associated feature with headache in 56 patients but 40 out of these had migraine as their final diagnosis. All the patients who had meningitis as their final diagnosis had photophobia as prominent associated feature with their headache. The frequency of signs on physical examination in malignant headache was as follows: 90% of those who had altered consciousness at presentation proved to have malignant cause for their headache. This figure was 91% for limb weakness, 100% for pupillary and gaze abnormalities, 89% for extensor plantar response, and 85% each for papilledema and neck rigidity.

Thirty eight CT Scan head were performed. Only 8 were reported as positive. Of these positive CT scan patients there were 6 males between the age of 51 to 60 years and 2 females above the age of 70 years. A total of 10 lumber punctures were performed. Out of these 5 (50%) were positive. Out of those who tested positive 3 (71.5%) were from the age group of below 10 years.

The final diagnosis made in the ER was as follows: Total of 24 patients had some malignant cause for their headache. Out of these Subarachnoid Haemorrhage 1.6% (n=5), Intracranial Hemorrhage 3 % (n=9), Meningitis 1.6% % (n=5), Venous Sinus Thrombosis 0.32% (n=1),

Benign Intracranial Hypertension 0.32% (n=1), Space Occupying Lesions 0.96% (n=3).

Discussion

Headache management especially in an emergency setting needs lot of expertise. Most of the ER physicians are trained in internal and emergency medicine and are expert enough to deal with the headache as a medical emergency.[7]

In a busy tertiary care centre ER where at least 2-3% of patients are admitted with headache as their chief complaint, a quick clinical assessment and a prompt diagnosis is essential for proper management. Sometimes, although rarely, the ER physicians cannot face satisfactorily the diagnostic challenge concerning the benign etiology of referred headache.[8]

The major critical issue in ER is to distinguish subtle primary headaches from more serious secondary headaches like subarachnoid haemorrhage, intracerebral haemorrhage, subdural haematoma,

Table I: Frequency of variables in the study population (n= 312)

Variable	Frequency
Males	116 (37.2 5 %)
Females	196 (62.8 %)
Time Spent < 2 Hours	217 (70.2 %)
Time Spent > 2 Hours	95 (29.81 %)
Malignant Headache	24 (7.7 %)
Benign Headache	288 (92.3 %)
No.of C.T Scan Done	38
No of C.T Scan Showing Pathology	8 (21%)
No of L.P performed	10
Abnormal L.P	5 (50 %)

hypertensive encephalopathy, brain tumor, and other space occupying lesions, artery dissection, cerebral venous thrombosis, temporal arteritis etc. Missing any of these could prove hazardous. [9]

All these situations demand both a careful evaluation and a correct diagnostic algorithm and can be grouped in subtypes such as severe-onset secondary thunderclap headache, transient neurological deficits, neurological deteriorations, headache associated with infections, etc.[10]

There are many clinical features which can distinguish between primary and secondary headaches. Benign headaches tend to occur in younger patients and predominantly in female. They are mostly unilateral and there is long history of constellation of similar features in each episode which usually have a triggering factor. On the other hand secondary headaches occur at an older age, males are the usual sufferers, are usually generalized, neurological examination is abnormal.[11]

The time course of a headache can give a good clue to the etiology of headache.[7] A new onset severe headache with abnormal neurological examination and presentation due to associated features is usually due to a secondary cause and should be investigated in ER with imaging.[8] An excruciatingly painful headache with a sudden onset can reflect vascular pathology, such as subarachnoid hemorrhage.[12,13]

Survivors of subarachnoid hemorrhage often describe the pain as the worst headache ever encountered.[14]

Headaches that occurs on at least 15 days per month for 4 or more hours per day, for at least three consecutive months is called chronic daily headache. If the attacks last for less than 4 hours per day then likely diagnosis is chronic cluster headache or trigeminal autonomic cephalalgia which includes episodic and chronic cluster headache, episodic and chronic paroxysmal hemicranias etc. If the duration is =4 hours then differential diagnosis encompasses chronic migraine and chronic tension-type headache.[15]

For a long time physicians have been using favorable response to analgesics as an indicator of benign type of headache. [12]Studies have proved that it is not a good predictor of severity rather, at times, it could be hazardous. [16]

Much work has been done in this regard to find out a relationship between clinical presentation and diagnosis of headache. Work of Detsky ME et. al. to find out cardinal signs pointing towards migraine and other benign headaches is worth mentioning. Four signs which predict migraine are unilateral, pulsating headache, of 4-72 hours duration associated with nausea.[1]

In the study by Ertan Mert et. al., three important correlations were found. Unilateral location and having any trigger increased 1.431 and 1.44 fold increase respectively in primary headache risk. Having an associated co-morbid medical disorder caused 4.643 fold increases in secondary headache risk.[17]

In the famous study by Ramirez-Lassepas M it was concluded that abnormal results from neurological examination are the best clinical parameters to predict structural intracranial pathology. However, in patients over age 55 years an imaging is strongly recommended specially if headache in the occipitonuchal region .[18] In our study abnormal neurological findings had strong association with secondary causes of headache.

Conclusions

We conclude that:

- Females present at younger age with headache and tend to have benign than malignant headache in majority of cases
- Males present at relatively older age and

tend to have malignant than benign headache in majority of cases

ER stay is prolonged because of:

- Severity of symptoms
- Investigations
- Difficulty in reaching a diagnosis
- Severity of headache is not an indicator of Malignant Headache.
- Photophobia and Phonophobia are not necessarily present in fulminant headache
- Abnormal Neurological Signs indicate malignant headache
- Most of the Investigations done are unnecessary
- With a good history and thorough Physical Examination Imaging like CT Scan and MRI can be avoided

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