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Original Research Article

Direct Ophthalmoscopic Findings in Headache Patients Presented in Headache Clinic of a Tertiary Care Hospital: A Cross-Sectional Study

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Abstract: ***Background*:** Ophthalmoscopic examination is one of the most critical but often neglected portions of clinical evaluation in case of headache as many secondary causes of headache show ophthalmoscopic change like papilloedema Optic atrophy, subhyaloid hemorrhage, cytoid body, choroid tubercle. So, a clinical examination is only complete with an ophthalmoscopic examination. With this view, this study is done on patients presenting with headaches in neurology outdoors for appropriate clinical evaluation. ***Aims & objectives*:** To evaluate ophthalmoscopic changes in patients presenting with headaches in the neurology outpatient department of a tertiary-level hospital. ***Method*:** This cross-sectional study included 300 patients presenting with headaches in the neurology outpatient department of DMCH. ***Result*:** Among the abnormal findings, papilloedema was the most common finding, present in (21.0%) of patients, followed by arteriovenous nipping & silver wiring detected in (18.0%) of patients; flame-shaped hemorrhages in 12.0% of cotton-wool spots in 9.0% patients and hard exudates in 8.0% patients. ***Conclusion*:** Ophthalmoscopic examination should be done routinely for headaches.

Keywords: Headache, Papilledema, Fundoscopy, Neurology outpatient, Retinal findings.

1. INTRODUCTION

Headache disorders rank among the most prevalent nervous system conditions globally, impacting nearly half of the world's adults at any given time with one or more of the three common headache disorders [1]. Estimates indicate a prevalence of approximately 50% among adults worldwide, affecting individuals of all ages, races, income levels, and geographic locations [2].

The International Headache Society classifies primary and secondary headache disorders, providing a foundation for diagnosis [3]. Primary headaches lack attributions to other causes, while secondary headaches can be linked to specific disorders. Examples include Migraine with or without aura as a primary headache and medication overuse headache as a secondary one.

Ophthalmoscopy, an established diagnostic tool, is vital in identifying characteristic ocular changes associated with various systemic diseases. Early signs observed in the eye's fundus can precede clinical manifestations, emphasizing the significance of ophthalmoscopic examination in routine medical practice. Recognizing symptom patterns indicative of primary headaches and identifying red-flag symptoms suggesting potential secondary causes is crucial for accurate diagnosis. Daily or frequent headaches warrant thorough assessment to discern the underlying cause.

Given the proximity of ocular structures, optic nerve, and optic disc to intracranial structures, pathological changes in these areas can indicate secondary headaches. Ophthalmoscopic examination becomes an essential component in the headache evaluation process. The retina is a crucial interface between ophthalmology and general medicine, reflecting systemic illnesses through ocular manifestations. In systemic conditions, ophthalmoscopic examination aids in diagnosing and managing diseases, contributing to a comprehensive clinical approach.

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While primary headaches typically do not manifest ophthalmoscopic changes, secondary headaches often present observable alterations. A detailed ophthalmoscopic examination holds decisive significance in diagnosing and monitoring such events [4]. By conducting a thorough history, physical examination, and ophthalmoscopic evaluation, healthcare practitioners can potentially reduce the necessity for neuroimaging, lumbar puncture, and other invasive studies. Recognizing specific ophthalmoscopic changes such as bilateral optic disc swelling, optic atrophy, subhyaloid hemorrhage, and hypertensive retinal changes can further guide the diagnostic process in patients with headaches. This study aims to assess ophthalmoscopic changes in individuals experiencing headaches.

2. METHODOLOGY

2.1 Type of Study:

It was a hospital-based descriptive cross-sectional study by the Department of Medicine and Neurology, Dhaka Medical College Hospital, Dhaka.

2.2 Objective of the study

a) General objectives: To evaluate ophthalmoscopic changes in patients presenting with headaches in the neurology outpatient department of a tertiary-level hospital.
b) Specific objectives:
   1) To observe the ophthalmoscopic findings of the study population.
   2) To observe the associated clinical features of the patients.
   3) Find out how the study population has changed in fundus
   4) To observe the sociodemographic data.

2.3 Study Population:

The patients presenting with headaches in the Neurology outpatient department of DMCH were included in the study. Diagnosis of headache was made based on the patient's statement, statement of the witness, characteristic features of headache, clinical examination, and available medical records. Due to time and resource constraints, 300 samples were taken in this study.

2.4 Selection of Population

Inclusion Criteria:

1) The patient was presented with a headache in Neurology outside of DMCH.
2) Age >18 years
3) Give informed written consent for the study.

Exclusion Criteria:

1) Seriously ill patients need ICU or HDU support.
2) Unable to perform fundoscopy due to hazy media.

2.5 Study Procedure:

The data was collected in a pre-formed standard printed data collection form after obtaining written informed consent from the patient. The procedure of the fundoscopy and the purpose of the study were explained to the patient. Then, a detailed history and clinical examination were made of every patient. At first, the researcher did the standard ophthalmoscopic examination, and then senior physicians/ophthalmologists of DMCH validated the examination findings.

2.6 Ethical measures:

Before the start of this study, protocol was approved by the Ethical Review Board of Dhaka Medical college hospital.

The aims and objectives of the study, along with its procedure, method, risks & benefits, were explained to the respondents in an easily understandable local language, and then informed written consent was taken from each patient or relatives or parents in case of a minor.

They were assured that all the information and records would be kept confidential.

2.7 Statistical analysis:

After collection, all the data were checked and edited. Then, data was entered into the computer with the help of SPSS for Windows programmed version 21. After the frequency run, data were cleaned, and frequencies were checked. Each respondent was given their code and was entered separately. An analysis plan was developed, keeping in view the objectives of the study. Data have been analyzed with this software where there is a frequency table of the variables with mean and median standard deviation. Cross tabulations and association among the sociodemographic variables with knowledge have been constructed using a statistical test. Total knowledge was transformed, computed, and recorded by giving the mark to the respondent, and then the mean value was calculated. The respondents whose score was below the mean value were classified as 'unsatisfactory, and those equal to or above the mean were classified as 'satisfactory knowledge.' Cross-tabulation was prepared, and a comparison was made. Chi-square and t-tests were done where and whenever required. A p level <0.05 was considered significant.

2.7 Flow chart showing the sequence of tasks:

Patient attended into neuro medicine OPD of DMCH
↓
History taking and clinical examination
↓
Screening of the headache patient by inclusion and exclusion criteria
↓
Taking informed consent of the patient for enrollment
↓
Ophthalmoscopic examination
↓
Evaluation of result of ophthalmoscopic findings

3. RESULT

The age group of 40 to 60 years constituted the highest portion (48.3%) of the respondents. Among the respondents, males were 58.0%, and females were 42.0%. Patients came from both urban and rural areas, with urban (68.0%) preponderance.

Table 1: Demographic distribution of the respondents

Characteristics	Frequency	Percent
Age		
<= 40 years	60	20.0
40 - 60 years	144	48.0
> 60 years	96	32.0
Sex		
Male	174	58
Female	126	42
Residence		
Urban	96	32
Rural	204	68
Economic status		
Poor	132	44
Middle	114	38
upper	54	18

Among the patients, the poor class 44% comprised a significant percentage, followed by the middle class 38% and the upper class 18%.

Papilloedema was the most typical finding, present in (21.0%) of patients, followed by arteriovenous nipping and silver wiring detected in (18.0%) of patients, Flame-shaped hemorrhages in 12.0% of patients, cotton-wool spots in 9.0% of patients and hard exudates in 8.0% patients. In this study, 78.0% of patients had normal ophthalmoscopic findings.

Table 2: Eye examination and Fundoscopic findings (n=300)

Fundoscopic findings	Frequency	Percent
Disc oedema (Papilloedema)	63	21.0
Arteriovenous nipping &Silver wiring	56	18.6
Optic atrophy	12	4.0
Flame-shaped hemorrhages	36	12.0
Cotton-wool spots	27	9.0
Hard exudates	24	8.0
Macular oedema/maculopathy	15	5.0
Dot and blot hemorrhages	30	10.0
Normal fundus	234	78.0

Among all the risk factors, hypertension was the most common risk factor, present in 37% of cases; the following common risk factors are Anxiety & depression 39.0%, smoking 34%, Ischaemic heart disease 22%, and history of stroke 24%. Table 3

Table 3: Risk factors profile of study subject (n=300)

Risk factors	Frequency	Percent
Hypertension	111	37.0
Anxiety & depression	116	39.0
Diabetes mellitus	48	16.0
Smoking	102	34.0
Past history of Ischaemic heart disease	67	22.0
Past history of stroke	72	24.0
Total	**300**	**100.0**

4. DISCUSSION

Papilloedema was the most typical finding, present in (21.0%) of patients, followed by arteriovenous nipping and silver wiring detected in (18.0%) of patients; flame-shaped hemorrhages were in 12.0% of patients, cotton-wool spots were 9.0% patients and hard exudates in 8.0% patients. In this study, 78.0% of patients were normal ophthalmoscopic findings.

The study revealed several predisposing factors or risk factors in the headache patient. Among all risk factors, hypertension was the most common risk factor, present in 37% of cases; the following common risk factors are Anxiety & depression 39.0%, smoking 34%, Ischaemic heart disease 22%, and history of stroke 24%.

With this result, papilloedema is the main finding of ophthalmoscopic examination of headache patients. One of the main reasons for secondary headaches is raised intracranial pressure due to any cause & papilloedema is the site reflection. Increased intracranial pressure due to cerebral tumors, intracranial hemorrhage, idiopathic intracranial hypertension, cerebral abscess, tuberculoma, and meningoencephalitis can all cause headaches. Approximately 30% of brain tumor patients consider headaches their chief complaint. The head pain is usually nondescript - an intermittent deep, dull aching of moderate intensity, which may worsen with exertion or vomiting. The headache of brain tumors disturbs sleep in about 10% of patients. Another important cause of papilloedema is malignant hypertension, which is a medical emergency. Hypertensive retinopathy is also an important finding in this study presenting with Headaches. A few patients were also found to have secondary optic atrophy.

Idiopathic intracranial hypertension (IIH) is a common cause of papilledema. A headache is often the initial complaint in idiopathic intracranial hypertension (IIH). Therefore, a thorough history and examination of intracranial pressure, visual acuity, and funduscopy are essential for assessing IIH [5, 6].

In a retrospective study of 82 patients with treated IIH, 68% had headaches that met the criteria for primary headaches as defined by the ICHD-130; the most frequent were tension-type Headaches (30%), migraine without aura (20%), chronic tension-type headache (10%) and analgesic overuse headache (8%). Interestingly, one patient was diagnosed with cluster headaches (1%) after the IIH was diagnosed.

Idiopathic intracranial hypertension (IIH) is nine times more common in females, with an incidence of 0.9/100 000 in the general population, rising to 3.5/100 000 in women between 15 and 44 years old. Clinically, IIH can present with isolated IH, isolated papilloedema, and isolated visual symptoms; Headache is described by more than 90% of patients [7].

5. CONCLUSION

The study demonstrate the crucial role of ophthalmoscopy in the clinical evaluation of headaches. This skill proves vital in confirming or ruling out various causes of secondary headaches. Furthermore, the study highlights how common systemic diseases often exhibit distinctive ocular changes that can be detected through ophthalmoscopy before clinical symptoms manifest.

Recommendation

All headache patients need a regular ophthalmoscopic examination to find out any abnormalities.

Limitation of the study

Although the researcher had tried optimum care in every step of this study, some limitations still existed;

The study was conducted on a hospitalized patient at DMCH. The study population may not represent the whole community. Although the study place is recognized as the largest specialized center for the concerned population, the findings might still need external validity.

The probability sampling technique could not be employed to recruit the study unit; they were selected purposively due to time constraints. As a result, there might be some selection bias.

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