

# Headache at the Ophthalmology Clinics

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## ABSTRACT

**Aim:** To determine the types of headache disorders presenting at the Ophthalmic Outpatient Clinics of the University of Benin Teaching Hospital.

**Methods:** A 2 year retrospective review of patients presenting with headache as a principal symptom at the Ophthalmic Outpatient Clinics of the University of Benin Teaching Hospital was conducted.

**Results:** Eighty-five patients comprising 18 males and 67 females with a primary complaint of headache were seen during the study period, with a male to female ratio of 1:3.7. The mean age of the patients was  $35.9 \pm 18.8$  years (age range 7-83 years). The highest incidence of headache 19 (22.4%) was in the age group of 21-30 years. Fifty-four (63.5%) of the patients had headache of ophthalmic origin, 20 (23.5%) had primary headache disorders while 11(13.0%) cases had secondary headache disorders. Overall, the most common causes of headache were refractive error 51(60%), migraine headache 15 (17.6%) and tension-type headache 5 (5.8%).

**Conclusion:** Headache disorders other than those of ophthalmic origin may present to the ophthalmologist. It is the responsibility of the ophthalmologist to be able to identify the etiology of headache, treat the ophthalmic disorders and refer other cases appropriately.

**Keywords:** headache, ophthalmologist, eye clinic, Nigeria.

## INTRODUCTION

Headache is a common complaint. Globally, 46% of adults have an active headache disorder.<sup>1</sup> Headache has a huge burden in every continent due to the significant socioeconomic loss associated with it.<sup>1,2</sup> The causes of headache are diverse and may result from disorders of different systems of the body. Patients may present to the Ophthalmologist because of pain in or around the eye or due to associated neuro-ophthalmic features such as visual loss, diplopia, ptosis and proptosis. These symptoms may be from

ophthalmic causes,<sup>3-5</sup> from primary headache disorders<sup>3,6</sup> or from secondary headaches.<sup>3</sup> The aim of this study is to determine the type of headache disorders presenting at the Ophthalmic Outpatient Clinics of the University of Benin Teaching Hospital, Benin City.

## MATERIALS AND METHODS

Approval for this study was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital, Benin City, Edo state. The study was done according to the tenets of Declaration of Helsinki. A retrospective study of all patients with a principal complaint of headache who presented at the Ophthalmic Outpatient Clinics of the University of Benin Teaching Hospital was done. The review spanned over a two year period from January 2012 to

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December 2013. Medical records were retrieved and data obtained included age, gender, complaints, clinical examination findings and diagnosis. For the purpose of this study we classified headaches into 3 broad groups: 1) headache of ophthalmic origin, 2) primary headache disorders with neuro-ophthalmic manifestations and 3) secondary headache disorders with neuro-ophthalmic features. Headache of ophthalmic origin refers to headache attributed to disorders of the eye and structures within the orbit. Primary headache disorders with neuro-ophthalmic manifestations refer to headaches without a structural abnormality that present with neuro-ophthalmic features (e.g. migraine headache), while secondary headache disorders with neuro-ophthalmic features refer to headache attributed to known structural disorders other than those of the eye or orbit that present with neuro-ophthalmic manifestations (e.g. intracranial space occupying lesions). Patients with incomplete data were excluded from the study. The data collected was analyzed with the IBM Statistical Package for Social Sciences (SPSS) Version 21 software (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp). Descriptive analyses such as frequencies, means and standard deviations were utilized.

### RESULTS

Eighty-five patients, 18 males and 67 females with a principal complaint of headache were included in the study, with a male to female ratio of 1:3.7. The mean age of the patients was  $35.9 \pm 18.8$  years (age range 7-83 years). The highest incidence of headache 19 (22.4%) was in the age group of 21-30 years. The age and sex distribution of the patients are shown in Table I. Table 2 shows the history of headache in the patients. Fifty-nine (69.4%) patients presented within 10 months of onset of headache. Headache was generalized in 73 (85.9%) patients. Twenty-seven patients (31.8%) did not have any other complaint apart from headache. The presenting visual acuities of the patients are as shown in table 3. Visual acuity of 6/6 or better in the right and left

eye were seen in 50 (58.8%) and 51 (60.0%) of the patients respectively. The mean intraocular pressure was  $13.1 \pm 2.7$ mmHg in the right eye and  $13.1 \pm 3.1$ mmHg in the left eye (Table 4). Only in one patient who had acute angle closure glaucoma was the IOP more than 21mmHg. The causes of headache presenting at the Ophthalmic Outpatient Clinics are summarized in Table 5. Fifty-four (63.5%) of the patients had headache of ophthalmic origin, 20 (23.5 %) had primary headache disorders while 11(13%) cases had secondary headache disorders. Overall, the most common causes of headache were refractive error 51(60%), migraine headache 15 (17.6%) and tension-type headache 5 (5.8%).

**Table 1: Age and sex distribution of patients**

Age group(years)	Sex		Total	%
	Male	Female		
≤10	0	5	5	5.9
11-20	2	13	15	17.6
21-30	4	15	19	22.4
31-40	4	9	13	15.3
41-50	4	8	12	14.1
51-60	1	12	13	15.3
61-70	2	2	4	4.7
71-80	1	2	3	3.5
81-90	0	1	1	1.2
Total	18	67	85	100

**TABLE 2: History of presenting complaints of the patients**

Variable	Frequency (n = 85)	%
<b>Site of headache</b>		
Generalized	73	85.9
Left	4	4.7
Right	3	3.5
Frontal	3	3.5
Occipital	2	2.4
<b>Other complaints*</b>		
None	27	31.8
Poor vision	27	31.8
Eye pain	16	18.8
Inability to read fine prints	9	10.6
Itching	6	7.1
Tearing	6	7.1
Spectacle intolerance	2	2.4
Others**	9	10.6
<b>Duration of symptoms (months)</b>		
0 – 10	59	69.4
11 – 20	6	7.1
21 – 30	7	8.2
31 – 40	4	4.7
41 – 50	3	3.5
51 – 60	3	3.5
> 60	3	3.5

\*Multiple responses

\*\*Others include *Insomnia, redness, eye discharge, ptosis, photophobia, light flashes, dizziness, and floaters.*

**TABLE 3: Visual acuity of the patients**

Variable	Frequency (n = 85)	Percentage
<b>Visual acuity (RE)</b>		
> 6/9 – 6/6	50	58.8
6/18 – 6/9	21	24.7
> 6/36 – 6/18	5	5.9
> 6/60 – 6/36	4	4.7
> 3/60 – 6/60	3	3.5
≤ 3/60	2	2.4
<b>Visual acuity (LE)</b>		
> 6/9 – 6/6	51	60.0
> 6/18 – 6/9	19	22.4
> 6/36 – 6/18	8	9.4
> 6/60 – 6/36	5	5.9
> 3/60 – 6/60	2	2.4
≤ 3/60	0	0.0

RE-Right eye; LE-Left eye,

**TABLE 4: Intraocular pressure of the respondents' eyes**

Variable	Frequency (n = 85)	Percentage
<b>Intraocular pressure (RE)</b>		
< 10 mmHg	1	1.2
10 – 14 mmHg	65	76.5
14 – 21 mmHg	19	22.4
> 21mmHg	0	0.0
<i>Mean IOP = 13.1 ± 2.7mmHg</i>		
<b>Intraocular pressure (LE)</b>		
< 10 mmHg	2	2.4
10 – 14 mmHg	66	77.6
14 – 22 mmHg	16	18.8
> 22mmHg	1	1.2
<i>Mean IOP = 13.1 ± 3.1mmHg</i>		

**DISCUSSION**

In this review, the highest incidence (22.4%) of headache was in the age group of 21-30 years. Marasini *et al*<sup>7</sup> reported the maximum incidence (55.0%) of headache to be in those between 17 and 40 years while Jain *et al*<sup>8</sup> found the maximum incidence (46.84%) of headache to be in the age group of 15–30 years. Jain *et al*<sup>8</sup> opined that the higher headache prevalence in this age group might be due to psychological stress. More females than males had headache in this study.

**TABLE 5: Causes of Headache presenting in the Ophthalmic Outpatient Clinics.**

Causes of headache	Male	Female	Total	%Total
<b>Headache of ophthalmic origin</b>				
AC Glaucoma*	-	1	1	1.2
Refractive error	12	39	51	60
Uveitis	-	2	2	2.4
<b>Primary headache</b>				
Migraine	3	12	15	17.6
Tension-type headaches	1	4	5	5.8
<b>Secondary headache</b>				
Cranial neuropathy	1	2	3	3.5
ICSOL <sup>†</sup>	1	3	4	4.7
IIH <sup>‡</sup>	-	2	2	2.4
Malaria	-	2	2	2.4
Total	18	67	85	100

\*ACG - Angle closure glaucoma.

<sup>†</sup>ICSOL- Intracranial space occupying lesion.

<sup>‡</sup>Idiopathic intracranial hypertension

This is consistent with the findings in other studies on headache in patients presenting to the eye clinic<sup>7,8</sup> and in the general population.<sup>1,9-</sup>

<sup>11</sup> Theories which have been postulated to explain this gender difference include fluctuations in sex hormones in the female<sup>11</sup> and differences in pain perception between males and females.<sup>12</sup>

In our study, headache from ophthalmic disorder was the highest accounting for 62.8% cases. This high number may be due to the fact that our study was conducted in an eye clinic. However, in the study by Jain *et al*<sup>8</sup> ocular headaches accounted for 36% of all cases presenting with headaches to the eye clinic. Headache attributed to refractive error was the leading cause in our study where it accounted for 60% of all headache cases and 94% of all ocular headaches. This is unlike the studies by Marisini *et al*<sup>7</sup> and Jain *et al*<sup>8</sup> where refractive error accounted for 44.0% and 64.8% of ocular headaches respectively. Wilfred Harris<sup>13</sup> and Gil-Gouveia *et al*<sup>14</sup> observed that headache attributed to refractive error may be independent of visual effort or the severity of the refractive error; the pain may be located in the eyes, over the eyebrows, in the frontal region, back of the head and neck or temple.<sup>13,15</sup> There are varying reports on the type of refractive error most frequently associated with headache. Astigmatism,<sup>8,16,17</sup> hypermetropia<sup>14</sup> and Myopia<sup>18</sup> have been reported differently as the refractive error most commonly associated with headache. Wrong correction of refractive error<sup>16</sup> and anisometropia<sup>16,18</sup> have also been associated with headaches. Headache attributed to refractive error, however, improves significantly with adequate correction of the refractive error.<sup>14,18</sup>

Uveitis and angle closure glaucoma are known causes of headache presenting to the ophthalmologist.<sup>4,19</sup> They are sight threatening and should be ruled out in patients presenting with headaches. Uveitis and acute angle closure

glaucoma accounted for 2.3% and 1.2% of headache cases respectively in our study. Their prevalence was higher in the study by Jain *et al*<sup>8</sup> accounting for 6.95% and 8.79% cases respectively. Glaucoma was identified in 2% cases in the study by Marisini *et al*<sup>7</sup>. The headache of acute angle-closure glaucoma is usually unilateral, involving the affected eye and the periorbital area.<sup>5</sup> It is usually associated with blurring of vision and haloes around light with typical changes in the affected eye.<sup>5,20</sup> The conjunctiva is injected, the cornea is edematous, the anterior chamber is shallow, the pupil is mid-dilated, vertically oval and fixed and the intraocular pressure is typically elevated above 30mmHg.<sup>20</sup> However, in subacute angle closure glaucoma, headache may be the sole presenting symptom.<sup>21</sup> Neshet *et al*<sup>21</sup> therefore, proposed that subacute angle closure glaucoma should be included in the differential diagnosis of headache in patients over 40 years of age and gonioscopy should be done to exclude a narrow anterior chamber angle.

Primary headache disorders with ophthalmic manifestations accounted for 23.5 % of cases in this study which is similar to the report by Jain *et al*<sup>8</sup> (26.57%). Migraine was the commonest primary headaches seen in our study and the second commonest cause of headache after refractive error in all cases of headache. Globally, 11% of the adult population have migraine headache.<sup>1</sup> The headache of migraine is typically unilateral, throbbing, of moderate to severe intensity, aggravated by normal physical activity and associated with nausea, photophobia and/ or phonophobia.<sup>5</sup> The patient with migraine may present to the ophthalmologist because of neuro-ophthalmic symptoms such as visual aura, eye ache, diplopia and ptosis.<sup>22</sup> In Africans, migraine with aura is reported to be uncommon;<sup>9</sup> no case with visual aura was noted in our study.

The other primary headache observed in this study was tension-type headache which was seen in 5% cases. Tension type headache is the

most common type of headache globally, accounting for 42% of headache in the adult population.<sup>1</sup> Tension type headache is typically bilateral, pressing or tightening in quality and of mild to moderate intensity; the pain does not worsen with routine physical activity and is not associated with nausea, but photophobia or phonophobia may be present.<sup>5</sup> Trigeminal autonomic cephalgias are a group of primary headaches that may present to the ophthalmologist, although it was not observed in our study. Trigeminal autonomic cephalgias include cluster headache, paroxysmal hemicrania, short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing, and short-lasting unilateral neuralgiform headache attacks with cranial autonomic symptoms.<sup>5</sup> Their clinical features include unilateral headache with tearing, eyelid edema, conjunctival injection and Horner syndrome ipsilateral to the headache.<sup>3,22</sup> Cluster headache is the most common of the trigeminal autonomic cephalgias,<sup>3</sup> but it is rare in Africans.<sup>9</sup>

Secondary headache disorder was seen in 13% cases in this study. This is less than that reported by Jain *et al*<sup>8</sup> in which secondary causes of headache were seen in 33% and were due commonly to ortholaryngological disorders. In our study, however, secondary headache was due largely to disorders of the nervous system. Patients with disorders of the nervous system may present to the ophthalmologist with associated neuro-ophthalmic features such as loss of visual acuity, visual field defects and optic atrophy when there is involvement of the visual pathway; papilledema occurs when there is raised intracranial pressure while diplopia and ophthalmoplegia occur with ocular cranial nerve (cranial nerve 3,4 or 6) involvement.<sup>4</sup> Thus, assessment of the pupils, extraocular motility, optic discs and visual fields should be part of the examination in a patient with headache symptom. Red flags that a headache is likely to be a secondary headache include a history of head or neck injury, new type of

headache, seizures, aggravation of headache by valsalva-like manoeuvres such as coughing or straining, altered sensorium, progressive neurologic deficits, progressive visual changes, asymmetry of pupillary responses, papilledema, fever, weight loss and scalp artery tenderness.<sup>23,24</sup> A systematic approach to the evaluation of headache<sup>25</sup> is necessary to make a correct etiologic diagnosis.

In conclusion, majority of the headache cases presenting to the Ophthalmologist in this study were due to ophthalmic disorders. However, about one- third of the headache cases were due to primary and secondary headache disorders which are causes of morbidity and mortality. The Ophthalmologist may be the first physician to see a patient with headache. The responsibility lies on the Ophthalmologist to be able to identify the etiology of headache, treat the ophthalmic disorders and refer other cases appropriately. A methodical technique in the evaluation of headache symptoms aids in making a correct diagnosis.

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