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AETIOLOGIES OF HYPHEMA IN A TERTIARY CARE CENTRE IN SOUTH EAST, NIGERIA

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Abstract: **Aim: To determine the causes of hyphema at the Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka, Nigeria.**

Methods: This is a retrospective hospital-based study conducted at the Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka, Nigeria. The case notes of new patients seen at the Eye unit of the hospital from January 2020 to December 2023 were examined. Those with hyphema were further reviewed. Relevant information was extracted for the study. The results were analyzed and presented with frequency tables.

Results: Out of the 2890 new patients seen, 39(1.43%) had hyphema; No bilateral case was seen among the 39 patients. Thirty-four out of the 39(87.2%) were males while 5(12.8%) were female with a male-to-female ratio of 6.8:1. The age range was 1 year to 80 years, mean of 22.8 years. Trauma 35(89.7%) was responsible for the most cases of hyphema. Fighting 18(46.1%) was the most common circumstance, followed by an accident at the workplace. The worst presenting visual acuity was NPL

Conclusion Ocular trauma is the most common cause of hyphema, males and the younger age group are the major victim. People should be encouraged to observe proper safety rules in their daily activities and at the workplace.

Keywords: **Aetiologies, Hyphema, Tertiary, Trauma, Safety.**

1. INTRODUCTION

Hyphema is defined as blood in the anterior chamber of the eye. It is a common manifestation of blunt trauma to the globe[1,10]. Although blood clears from the chamber without problems in most cases, a significant number of short and long-term complications may develop. Hyphema patients are predominantly males, objects implicated in the causes of hyphema are many and include but are not limited to fists, rocks, and sticks[2,3,4,5]. Projectiles have been confirmed as frequent cases of ocular injury[6]. The amount of blood in the anterior chamber is used as the basis for grading of hyphema, and it ranges from microscopic to total eyeball hyphema1.

Blood in the anterior chamber is less common and arises from rebeosis iridis, vitreous haemorrhage, occult perforating injury, neoplasm (retinoblastoma), malignant melanoma metastatic tumour, juvenile xanthogranuloma blunt ocular trauma causes stretching of the limbal tissue, equatorial sclera expansion, posterior displacement of the lens/iris diaphragm and acute elevation of intra-ocular pressure with resultant tearing of tissue near the anterior chamber angle[7].

In ocular blunt trauma, seven anterior rings that expand include sphincter papillae, peripheral edge of the iris (iris base), anterior ciliary body, ciliary body attachment to the seleval spur, trabecular meshwork, and zonule of the lens and attachment of the retina to the ova-serrata. The expansion of any of those rings can cause a tear and consequent hyphema and other sequale[1,8].

2. MATERIALS AND METHODS

This is a retrospective hospital-based study carried out at the Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka, Nigeria. The case notes of the new patients seen at the eye unit of the hospital from January 2020. December 2023 were examined. Those with hyphema were further reviewed. The biodata (age, sex, occupation) and clinical data, which highlighted the circumstances and presenting visual acuity, was extracted and recorded on a standard proforma. The data was analysed using a scientific calculator and presented as frequency tables.

3. RESULTS

Out of the 2890 new patients, 39(1.4%) had hyohema. No bilateral case was seen. Out of the 39 patients, 34(87.2%) were males while 5(12.8%) were females (M.f ratio 6.8:1). The age range was 1 year to 80 years, mean age 22.8 years. The modal age distribution is 20 years (10 patients). Thirteen cases (33.3%) ages ranging between 11 – 20 years had more hyphema, followed by eleven cases (28.2%) between the ages of 21 – 30 years (Table 1),

Table 1: Age and Sex Distribution of 39 patients

Age	Male	Female	Total	Percentage
1 – 10	7	2	9	23.1
11 – 20	11	2	13	33.3
21 – 30	11		11	28.2
31 – 40	4	-	4	10.3
41 – 50	-	-	-	-
51 – 60	-	-	-	-
61 – 70		1	1	2.7
71≤ 80	1		1	2.7
	34	5	39	100

Trauma was responsible for 35(89.7%) cases, while rectinoblastoma, rubiosis iridis of diabetic retinopathy and malignant melanoma of the choroid were responsible for 2(5.1%), and 2.6% respectively table 2.

Table 2: Distribution of hyphema according to causes

Cause	No. of patients	Percentage
Trauma	35	89.7
Retinoblastoma	2	5.1
Diabetes	1	2.6
Malignant melnoma	1	2.6
	39	100

The setting of the injury were fighting 18(46.1%) sports, at work place 7(17.9%), physical attack 4(10.3%), ocular morbidity 4(10.3%), accident 3(7.7%) and sports 3(7.7%). Table 3. Three cases were associated with open globe injury.

Table 3: Distribution of hyphema according to circumstances

Circumstances	**No Patients**	**Percentage**
Fighting	18	46.1
At work place	7	17.9
Physical attack	4	10.3
Ocular morbidity	4	10.3
Accident	3	7.7
Sports	3	7.7
Total	39	100

The distribution of the hyphema according to grade are as shown in table 4. Grade 1 was the most common 20(51.3%) while grade iv was the least common 4(10.3%). The patients with open globe and total hyphema had poorer visual acuity at presentation.

Table 4: Distribution of hyphema according to grade

Grade	No of patient	Percentage
Grade 1	20	51.3
Grade II	10	25.6
Grade III	5	12.8
Grade IV	4	10.3
Total	39	100

Eight (20.5%) had presenting Visual acuity of 6/9≤ 6/18 which is the best for the study population, while 1(2.6%) patient had visual acuity of no light perception (NPL) which is the worst visual acuity for the study group, tables 5.

Patients with open globe and total hyphema had worst presenting visual acuity.

Table 5: Distribution of patients according to presenting visual acuity

Visual acuity	No. of patients	Percentage
$\frac{6}{6} \leq \frac{6}{9}$	-	-
$\frac{6}{9} \leq \frac{6}{18}$	8	20.5
$\frac{6}{18} \leq \frac{6}{36}$	16	41.0
$\frac{6}{36} \leq \frac{6}{60}$	3	7.7
$\frac{6}{60} \leq \frac{3}{60}$	2	5.1
$\frac{3}{60} - Fc\ at\ 2m$	1	2.6
H/M	3	7.7
L.P	3	7.7
NPL	1	2.6
Total	37	94.9

Two patients (5.1%) with retinoblastoma could not be assessed for Visual Acuity (VA).

Table 6: Distribution of patients by occupation

Occupation	**No. of patients**	**Percentage**
Primary school children	12	30.8
Students	14	35.9
Artisan/trader	11	28.2
Dependent	2	5.1
Total	39	100

4. DISCUSSION

Trauma is the most common cause of hyphema in this review. This has been reported by another author[1]. Other non-traumatic causes of hyphema recorded in this study include retinoblastoma, malignant melanoma and rubeosis iridis and this has been collaborated by other author[1]. More males and younger age groups were found to be afflicted by hyphema than the females and older age groups. This finding could be due to risky physical activities associated with males and younger age groups. Studies in North America in children and adults estimate the incidence of hyphema at 17 to 20 per 100,000 per year[9,10]. The findings in these American studies are lower than those of the present study and may be explained based on developed and developing countries. Safety measures are more observed in developed countries. Fighting (46.1%) and work-related (17.9%) circumstances were the commonest cause of hyphema. The attitude of youths to engage in violence may be the reason for this. Also, the non-observance of safety measures at the workplace may be the reason for increased trauma to the eye with consequent hyphema. However, physical attacks by criminals have resulted in hyphema. Domestic and road traffic accidents have been implicated as causes of hyphema and such have been reported by Ochiogu et al[4]. Grade 1 hyphema (51.3%) was the most common grade observed in this study while grade iv was the least. The higher number of grade I hyphema in this study may be because the younger age group are more than the elderly patients.

The majority of the patients in this study were of the younger age group. However, the level of blood in the anterior chamber does not correlate well with some later complications[8].

The patients with grade I hyphema presented with better visual acuity than those with total hyphema, malignant melanoma, hyphema with added ruptured globe and rubeosis iridis. Students and artisans/traders form the major population of this study group. Since they are in the active stage of their lives, they undertake more risky ventures than older people. Road traffic crashes account for 7.7% of the aetiology[10], Often, the eye injury caused by these crashes is associated with other injuries like humeral, femoral, tibial, ankle, and pelvic injuries[12,25,26,27] or following polytrauma.[14,19,34,36] Complications could arise, leading to anterior uveitis and hypopyon. This could be as a result of immunosuppression from longstanding diabetes or due to HIV.[20,30,32] Some have periprosthetic fractures and other implant loosening, leading to surgeries and other high-profile interventions. [15,21,24,37] Despite the scary nature of hyphema, some of the patients still seek alternative means of management other than orthodox treatment. There is the use of cow urine, cow dung and other obnoxious practices that may worsen the outcome of this condition.[28,35,38]

5. CONCLUSION

Ocular trauma is the most common cause of hyphema; males and the younger age group are the major victims. People should be encouraged to observe safety rules in their daily activities and at workplaces.

Ethical considerations

Ethical approval was obtained from COOUTH ethical board.

Conflict of interest

There was none

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