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ORIGINAL ARTICLE

CLINICAL PROFILE OF ETHIOPIAN PATIENTS WITH RHEGMATOGENOUS RETINAL DETACHMENT

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ABSTRACT

Introduction*: Clinical presentation of rhegmatogenous retinal detachment in the developing world is not very well known.*

Objective: *This study reports the clinical presentation of 321 cases of rhegmatogenous retinal detachments in Ethiopian patients.*

Methods: *A prospective cross-sectional descriptive study was undertaken to evaluate the clinical presentation of all patients with rhegmatogenous retinal detachment seen at the retina clinic of Menelik II Hospital from October 2013 to February 2016. Complete ophthalmic examination was done including ultrasound when the media was hazy.*

Results: *The mean age at presentation was 41.8 years with male to female ratio of 2.3:1. Two hundred eighty of the involved eyes (87.2%) were blind (visual acuity < 3/60). The duration of symptoms was over 1 month in 220 (68.5%) cases and in 268 ((83.5%) the macula was detached at presentation. Long distance from the tertiary center was the main reason number (25.8%) for late presentation. Myopia observed in 151(47%) cases, was the major predisposing factor.*

Conclusions: *The profile of rhegmatogenous retinal detachment among Ethiopians presenting at a tertiary care center includes many young cases, late presentations and macula-off detachments, commonly related to myopia. Improvements in primary health care and education should reduce the delay in presentation.*

Key words: *rhegmatogenous retinal detachment, myopia, late presentation.*

INTRODUCTION

Retinal diseases are traditionally given low priority in the developing world because of the overwhelming burden of blindness and low vision caused by diseases like cataract and trachoma. Leading causes of blindness and low vision in the developed world such as age-related macular degeneration and diabetic retinopathy were believed to have low prevalence in the developing world especially Africa. There are changing trends in the prevalence of retinal diseases in the developing world. With changing lifestyles and demographics in the developing world, retinal diseases are assuming an important role in causing blindness and low vision. (1). A population-based study conducted in an urban area in India found that the top 3 causes of blindness were cataract (29.7%), retinal disease (12.5%), and corneal disease (15.4%) (2).

Rhegmatogenous retinal detachment (RRD) is one of the major retinal disorders which leads to unilateral or bilateral blindness if untreated. RRD in the developing world differs from RRD in the developed world. These differences may arise because of genetic differences or geographic and socio-economic factors (3). There are few data about the incidence of RRD and its clinical features in the developing world especially from Africa. The purpose of this study was to determine the characteristics of RRD at a tertiary eye care center in Addis Ababa, Ethiopia.

PATIENTS AND METHODS

A prospective cross-sectional study was conducted on all consecutive patients with RRD seen at the Retina Clinic of Menelik II Hospital from October 2013 to February 2016. The eye department at Menelik II Hospital is the largest eye department in the country and provides a referral service to patients coming from all over the country.

Demographic data including age and sex were recorded. In the history, the presenting complaint and duration of the complaint were recorded. Past ocular history including history of trauma and ocular surgery were sought and recorded. Information about the time and place where the patients were first seen,

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and about the health institutions involved in referral of the patients to Menelik II Hospital was documented. For patients with duration of detachment longer than one week, reasons for late presentation were elicited.

Best corrected visual acuity was taken, and the presence of myopia was sought and recorded. Comprehensive eye examination was carried out paying attention to presence of corneal opacity, posterior synechae and lenticular status including cataract, aphakia and pseudophakia. Dilated fundus examination was done with non-contact slit lamp biomicroscopy using a 90D lens and indirect ophthalmoscopy. The presence of vitreous pathologies including vitreous pigment/cells and hemorrhage were noted. The extent of retinal detachment in the four quadrants, macular status, the number, type and location of breaks were documented. B-scan ultrasonography (Sonomed) was performed for patients precluding clear view of the posterior segment. The initial evaluations were done by residents at the retina clinic. Consultant Ophthalmologists confirmed the findings and set the treatment plan.

One RRD in one eye was considered as a case. If a patient presented with simultaneous bilateral RRD, this was regarded as one case. If the fellow eye had developed RRD within the study period, this was re-

Data were entered onto SPSS version 15.0 and appropriate statistics were computed between baseline characteristics of patients with a pattern of retinal detachment using Fisher Exact test. P-values below 0.05 were considered statistically significant.

Ethical clearance to conduct the study was obtained from the Research and Publication Committee of the Department of Ophthalmology, Medical Faculty Addis Ababa University. Similarly, verbal consent was obtained from each participant and subjects had the right to withdraw from the study at any time.

RESULTS

A total of 321 incident cases of rhegmatogenous retinal detachment who were seen at Menelik II Hospital during the study period were included. The sociodemographic and baseline characteristics of the patients are shown in Table 1. There were 224 (69.8%) men and 97 (30.2%) women with a male to female ratio of 2.3:1. The mean age at presentation was 41.8 years ± SD 16.6 (range: 9-76 years, median: 40 years). Fifty-eight (18.1%) patients were illiterate and 149 (46.4%) cases were from outside of Addis Ababa.

Table 1: Sociodemographic and baseline characteristics of Rhegmatogenous Retinal Detachment Cases seen at Menelik II Hospital, Addis Ababa, Ethiopia, October 2013-February 2016. (N=321)

	Sex		
	Male (N)	**Female (N)**	**Total N (%)**
Age (years)			
0-9	1	0	1 (0.32)
10-19	21	6	27 (8.4)
20-29	37	19	56(17.4)
30-39	43	23	66 (20.6)
40-49	41	15	56 (17.4)
50-59	39	17	56 (17.4)
60-69	32	11	43 (13.4)
>70	10	6	16 (5.0)
Educational level			
Illiterate	30	28	60 (18.7)
Read and write	61	29	87 (27.1)
Grade 1-6	62	21	81 (25.2)
Grade 7-12	56	17	75 (22.4)
Grade 12 and above	15	2	18 (5.6)
Risk factors			
Myopia	100	51	151 (47.0)
Trauma	71	30	101 (31.5
Cataract surgery	39	13	52 (16.2)
Others	14	3	17 (5. 3
Total	224	97	321

Reduction of central vision was the presenting compliant in almost all the patients write number(97.5%). The mean duration after the onset of symptom was 26 (± 40.3) weeks. Only 18(5.6%) patients presented within one week after the onset of symptoms. Those who presented within four weeks accounted for 101 (31.4%) whereas 71 (22.1%) presented six months after the onset of their complaint (Table 2). Only 8 (2.5%) patients directly visited the tertiary eye care center, the rest were referred from other clinics and secondary eye care units. The common reasons for late presentation given by the study subjects with duration of complaint exceeding one week was the long distance from the tertiary eye care center 83 (25.9%) followed by late referral from primary and secondary eye care centers 79 (24.6%) and long appointment for evaluation even at the referral hospital 73 (22.7%). Surprisingly, among patients with late referral 208 (64.7%) were from Addis Ababa, a city where the referral center is located (Table 2). Two hundred eighty cases (87.2%) had visual acuity in the range of blindness (< 3/60). The right eye was involved in 158 cases (49.2%) and the left eye in 163 cases (50.8%).

Table 2: Visual Acuity Characteristics and Time of Presentation of Rhegmatogenous Retinal Detachment, Menelik II Hospital, Addis Ababa, Ethiopia, October 2013 - February 2016(N=321)

	Male (N)	Female (N)	Total N (%)
Presenting visual acuity			
<3/60	192	88	280 (87.2)
< 6/18, > 3/60	29	7	36 (11.2)
6/6 – 6/18	3	2	5 (1.6)
Time of presentation			
< 1week	14	4	18 (5.6)
1- 4 weeks	60	23	83 (25.9)
5 –12 weeks	56	31	87 (27.1)
13 –24 weeks	43	19	62 (19.3)
>24 weeks	51	20	71 (22.1)
Causes of delayed presentation			
Distance	55	28	83 (25.9)
Lack of awareness	27	19	46 (14.3)
Late referral	58	21	79 (24.6)
Financial constraints	16	6	22 (6.9)
Long appointments	54	19	73 (22.7)
Others	14	4	18 (5.6)
Total	224	97	321

Due to ocular media opacity, it was not possible to examine the posterior segment in 35 eyes (10.9%). Out of 286 eyes with clear media, 268 eyes (93.7%) had macula off detachment. Four retinal quadrant involvement in 98 eyes (34.3%). The break(s) responsible for the RRD were identified in 188 eyes (65.7%). Of these 188 eyes, the RRD was attributed to a single break in 141 (75.0%).

Horse-shoe tears and atrophic breaks were found in 127 (67.6%) and 31 (16.5%) cases respectively. The break was localized to the superotemporal and superonasal quadrants in 91 (48.4%) and 45 (23.9%) of eyes respectively (Table 3).

History of spectacle use for myopia was elicited in 151cases (47.0%). History of ocular trauma was found in 101 cases (31.5%) and of these, in 90 (89.1%) the trauma was described as blunt. Fifty-two cases (16.2%) had undergone major ocular surgery, of which cataract surgery accounted for the majority 49 (94.2 %).

Of those who had undergone cataract surgery, pseudophakia and aphakia accounted for 80.3% and 19.7% respectively (Table 1) The mean age for traumatic retinal detachment was 37.3 years and for non-traumatic RRD it was 44.3years. The difference was statistically significant (p-value=0.013).

Table 3: Clinical Characteristics of Rhegmatogenous Retinal Detachment, Menelik II Hospital, Addis Ababa, Ethiopia, from October 2013 to February 2016. (N=321)

	Sex		
	Male (N)	**Female (N)**	**Total N (%)**
Macula status			
On	14	4	18(5.6)
Off	185	83	268 (83.5)
Hazy view	25	10	35(10.9)
Extent of RRD			
One quadrant	4	1	5 (1.6)
Two quadrants	56	28	84 (26.2)
Three quadrants	66	33	99 (30.8)
Four quadrants (total)	73	25	98 (30.5)
Hazy view	25	10	35 (10.9)
Breaks found			
Yes	133	55	188(58.6)
No	66	32	98(30.5)
Hazy view	25	10	35(10.9)
Type of breaks			
Horse-shoe tears	92	35	127(39.6)
Atrophic breaks	20	11	31(9.7)
Giant tears	10	8	18(5.6)
Dialysis	11	1	12(3.7)
Not seen	91	42	133(41.4)
Location of breaks			
Supero-temporal	60	31	91(28.3)
Supero-nasal	36	9	45(14.0)
Infero-temporal	23	11	34(10.6)
Infero-nasal	14	4	18(5.6)
Not seen	91	42	133(41.4)

DISCUSSION

This is the first large prospective descriptive study on RRD in Ethiopia and one of few such studies in Africa. The mean age of our study subjects was 41.8 years, comparable to that of a study from India which had a mean age of 38 years (4) and another study from South Africa which reported a means age of 40 years (5). Our study participants however were on average younger than what has been reported from studies conducted in some western countries. Studies from Minnesota in the United States (6), Finland (7) and New Zealand (8) each reported a mean age of 54 years while in Sweden the mean age was 60 years (9). The younger age of patients with RRD in developing countries may reflect the demographics which is dominated by young people. It may also be a result of RRD developing at a younger age in developing countries. It has been reported that RRD develops at a younger age among African Americans (10).

The role of gender in RRD development remains obscure in many reports. It has been thought that there might be a sex difference among patients with RRD with a preponderance of males even when cases with traumatic RRD are excluded. Reports from East Africa (11), Minnesota (6), New Zealand (8), Singapore (12) and Scotland (13) have shown male predominance in the incidence of RRD. In this study, males had a three-fold higher rate of RRD than females, with this tendency observed across almost all age groups. However, as this study is not a population-based study, the gender difference may reflect gender bias in accessing health care services rather than increased epidemiologic risk of the disease in males.

Because of poorly developed primary eye care infrastructure and limited facilities for the diagnosis and management of retinal diseases in the developing world, many patients with RRD present late.

The proportion of patients presenting within the prognostically favorable first week of onset of symptoms is only 5.6%, with 68.5% of patients presenting later than 1 month after onset of symptoms. In India (4) 44% of patients were symptomatic for over a month before presentation while in Iran this figure was 47% (14). In South Africa 70% of eyes had symptoms for at least one month prior to surgery (5). The mean duration of detachment of our patients was much longer than their European counterparts. Distance from the tertiary center (25.9%), late referral from primary centers (24.6%) and long appointment (22.7%) were the three major reasons our patients gave for not coming early.

Myopia is a well-known risk factor for RRD. The Eye Disease Case Control Study showed that myopic people have 4-10 times higher risk of developing RRD (15). A significant proportion of RRDs (47%) in our patients was associated with myopia. The prevalence of myopia in our series was higher than a previous report from India where it was 18.4% (4).

In our study, trauma was thought to contribute to the RRD in 31.5% of the cases. Similarly, trauma contributed to the RRD in 30% of eyes in South Africa (5). In developed countries, trauma was found to contribute less with a report of 7% from Minnesota (6).

In South Africa 9.6% of eyes with RRDs had previous cataract surgery (5). That proportion of eyes that had undergone cataract surgery was 24.1% in Kenya (11), 12% in Singapore (12), 27.5% in Iran (14) and 35.7% in India (4). The proportion of patients with RRD following cataract extraction in our study was 15.2% which is comparable to East African studies (11). With increased effort to increase cataract operations, the proportion of RRDs associated with cataract surgery is bound to increase. This will be compounded by the increased risk of RRD in complicated cataract surgeries which are bound to happen in the setting of limited infrastructure and less than optimal training.

Macular attachment at presentation is an important prognostic indicator of visual outcome after reattachment surgery. Western studies showed a macula-off detachment rate of 40-60%, (4,9) compared with a higher rate of 86.8% in developing countries (16). Our series has shown the highest proportion of macular detachment (93.7%), which is consistent with the high rate of late presentation (94.4%). High rate of total and near total detachments with preponderance of macula-off cases was observed from other African countries (5,11).

Nearly 71.1% of our patients had total or near total retinal detachment with three or four quadrant involvement. In contrast, in a large series from Scotland, four quadrant involvements were found in only 8% of cases (13).

The causative break was identified only in roughly 65.7% of eyes, in whom the media was clear. This is in sharp contrast with the theoretical teaching where the proportion of patients in whom the responsible break(s) are identified is well above 90%. One important reason for the lower detection rate of breaks is that since many patients present late with complicated RRDs which are deemed inoperable, limited effort is made to find the breaks in these cases. At the time of the study, the most common procedure was scleral buckle surgery with vitrectomy surgery being done in very few cases. Thus, many of the RRDs were judged to be inoperable, thus reducing the break detection rate.

In our series, a horseshoe tear was found in 67.5% of RRDs in which retinal breaks were detected. This figure is very high when compared to a South African study where only 28% of RRDs were caused by horseshoe tear with Posterior Vitreous Detachment (PVD) and 29% due to atrophic holes (5). Regarding location of breaks, in most cases, the retinal breaks were in the supero-temporal quadrant (48.4%), the next common site being in the supero-nasal quadrant (23.9%). A large study from Scotland reported the supero-temporal quadrant as the most common site (56.0%) followed by the supero-nasal quadrant (25.7%) (13).

Most of the subjects with RRD seen in our study presented very late to the study center during the study period so that a significant number of eyes (69.5%) showed signs of longstanding RRD at presentation. This figure by far exceeds the reports from other countries such as 33% from South Africa (5), 32% from India (4) and 13% from Iran (18).

Conclusion

This study has shown that RRD occurs at a younger age among Ethiopians. High myopia, blunt ocular trauma and cataract extraction in decreasing order were the main risk factors predisposing Ethiopians to RRD. Patients with high myopia need regular follow up with dilated fundus evaluation to detect retinal breaks early. Ocular trauma in general should be addressed by delivering health education to the community using mass media, at schools and health care facilities. The study also showed that most patients with RRD seek medical attention quite late with features of long-standing retinal detachment at first presentation to a health facility.

Hence adopting measures such as increasing access to vitreo-retinal services by decentralization of such services to the regions and ensuring that facilities are well equipped and increasing the number of vitreo-retinal surgeons in the country is highly recommended.

Competing interest

The authors declare that this manuscript was approved by all authors in its form and that no competing interest exists.

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