

## Rare Retinal Disorders-A Study from a Hilly State

Anubhav Chauhan<sup>1\*</sup>, Kulbhushan Prakash Chaudhary<sup>2</sup> and Gian Chand Rajput<sup>3</sup>

<sup>1</sup>M.S Ophthalmology, Senior Resident, Deptt. of Ophthalmology, Dr Yashwant Singh Parmar Govt. Medical College, Nahan 173001, District Sirmour, Himachal Pradesh, India

<sup>2</sup>M.D Ophthalmology, Former Principal cum Professor and Head, Deptt. Of Ophthalmology, Indira Gandhi Medical College, Shimla 171001, Himachal Pradesh, India

<sup>3</sup>M.S Ophthalmology, Asstt. Professor, Deptt. Of Ophthalmology, Indira Gandhi Medical College, Shimla 171001, Himachal Pradesh, India

**\*Corresponding Author:** Anubhav Chauhan, M.S Ophthalmology, Senior Resident, Deptt. of Ophthalmology, Dr Yashwant Singh Parmar Govt. Medical College, Nahan 173001, District Sirmour, Himachal Pradesh, India.

**Received:** October 22, 2018; **Published:** November 02, 2018

### Abstract

**Aim:** To study the pattern/distribution of retinal detachments and tumors in the hilly terrain of Himachal Pradesh (altitude ranging from 500-4500 metres above sea level).

**Material and Methods:** It is a retro/prospective study of patients with retinal diseases attending the general ophthalmology clinic of a tertiary care facility at Shimla from August 2008 to April 2013. Out of 5600 subjects, 4323 were taken as a sample. The data was taken from the hospital records and thereafter analyzed to determine their age, sex distribution and diagnosis. All patients underwent visual acuity, refraction, slit lamp examination and fundus evaluation. The diagnosis was confirmed from fundus clinic records and evaluation of fundus photographic records retro-prospectively. The photographs were taken on the fundus camera (KOWA'S FUNDUS CAMERA VX-10) and fundus fluorescein angiography (FFA) done where ever indicated.

**Results:** Since this study is aimed to project the pattern of retinal detachments and tumors, other retinal disorders are not included here. Amongst the 47 (1.08%) subjects of Retinal detachments, the most common entity was Non Rhegmatogenous Retinal Detachment (NRD). Amongst the 9 (0.21%) subjects of Ocular Tumors, Choroidal Melanoma (CHM) was the predominant disease.

**Conclusion:** Retinal detachments and tumors also appear to be a public health problem in India as well as the Shimla hills. The present study shall help us in planning the management of such disorders in the hilly state of Himachal Pradesh to reduce the visual morbidity arising out of such disorders.

**Keywords:** Himachal Pradesh; Retrospective; Retina

### Introduction

Vitreo-retinal diseases are one of the more common ocular morbidities leading to blindness in the adult population. Population based studies reported an overall prevalence of vitreo-retinal disorders of 8.56%, with a range between 10.4% and 21.02% for the 40 years and over age group.[1] According to the Pakistan National Survey for blindness and visual impairment done in year 2002-03,

**Citation:** Anubhav Chauhan, Kulbhushan Prakash Chaudhary and Gian Chand Rajput. (2018). "Rare Retinal Disorders-A Study from a Hilly State". *Journal of Medicine and Surgical Sciences* 1.1.

posterior segment diseases accounted for 3.4% of total blindness and visual impairment.[2] The management of posterior segment disorders presents peculiar diagnostic and therapeutic challenges, especially in the resource deficient third world settings.[3]

Unlike the affections in anterior segment of the eye, the diseases affecting retina are mostly irreversible and often sight threatening. [4] A study found that retinal disorders are an important cause of blindness in India. It is estimated that there will be 244 million people (14.9% of the population) 65 years and older by 2050 compared with 42 million (4.5% of the population) in 1995. This shift in demographics is likely to be accompanied by a shift in the prevalence of retinal diseases as major causes of blindness in India. [5]

In this retro/prospective study of retinal diseases at a tertiary care facility of Shimla hills, we determined the pattern of retinal detachments and tumors among the patients who reported for photographic evaluation.

## Subjects and Methods

### Subjects

The present study was conducted in the Department of Ophthalmology, Indira Gandhi Medical College, Shimla. Shimla is the capital of Himachal Pradesh (H.P) which has 12 districts. A total of 5600 subjects from all districts of H.P visiting the fundus clinic of a tertiary care institute were evaluated during a period from August 2008 to April 2013. From these 5600 patients, 4323 subjects were taken as a sample. It is a retrospective and prospective study. We confirm adherence to the guidelines of the Declaration of Helsinki as well as Indira Gandhi Medical College Hospital ethics committee approval.

### Methods

In brief, the present study involved 4323 subjects residing in H.P (altitude ranging from 500-4500 metres above sea level). H.P is a hilly terrain and has a very distinct population that is composed of ethnolinguistic groups of tribals and socials. Most of the natives belong to Aryan origin while the people of Lahaul and Spiti district are essentially descendants of Mongols. Patients coming from all districts of H.P underwent visual acuity, refraction, slit lamp examination and pupil dilatation for detailed fundus evaluation. The diagnosis was confirmed from hospital records, fundus clinic records and evaluation of fundus photographic records retro-prospectively. Inclusion criteria included proper and complete records of the patient with clear fundus photographs and FFA whereas exclusion

criteria included fundus photographs/FFA taken on fundus camera not clearly visible for making a diagnosis and patients presenting with opaque ocular media.

In all the subjects, ophthalmological examination was performed. Visual acuity was measured by using Snellen's chart, Slit lamp biomicroscopy was done to assess the ocular adnexa and the anterior segment of eye using a slit lamp biomicroscope (Haag Striet-900), Fundus examination was done by using the direct and indirect ophthalmoscope.

Fundus photographs were taken on the fundus camera (KOWA'S FUNDUS CAMERA VX-10, KOWA Company Ltd,4-14, Nihonbashi-honcho3-chome,Chuo-ku,Tokyo 103-8433Japan). This equipment is capable of mydriatic and non-mydriatic photography with two angles of view: 50 degree and 25 degree (45 degree and 22 degree for non mydriatic photography). The subject was instructed to be seated in front of the fundus camera. Height of the optical bench was adjusted to let the chin on the chin rest and forehead on the forehead rest in a natural posture. The examined eyes were set at the eye level mark. Fundus camera was positioned such that the luminous spots for alignment can come in the centre and the luminous spot is smallest and sharpest. Then by pressing the shutter button for photographing, the image taken were displayed on the monitor.

Fluorescein Angiography was performed by injecting a 6 second bolus injection of 2-5 cc of sodium fluorescein into a vein in the arm or hand. A series of black-and-white or digital photographs were taken of the retina before and after the fluorescein reaches the retinal circulation (approximately 10 seconds after injection). Photos were taken approximately once every second for about 20 seconds, then less often. A delayed image was obtained at 5 and 10 minutes. A filter was placed in the camera so only the fluorescent, yellow-green light (530 nm) was recorded.

### Statistical Analysis

Data collected was managed on an excel spreadsheet. Significance was determined by using percentage.

### Results

During the period from August 2008 to April 2013, 5600 patients visiting the fundus clinic of the tertiary care institution were evaluated. From these 5600 patients, 4323 subjects were taken as a sample for the study.

Male/Female	Total	Percentage
Male	2563	59.28%
Female	1760	40.72%
Total	4323	100

**Table 1:** (Gender distribution of cases).

Since this study is aimed to project the pattern of retinal detachments and tumors, other retinal disorders are not included here.

Disease	Total	Percentage
RRD	13	0.30%
NRD	30	0.69%
RETINOSCHISIS	4	0.09%
Total Detachments	47	1.08%

**Table 2:** (Retinal Detachments).

Table 2 reveals that out of 47 (1.08%) subjects of detachments, Rhegmatogenous Retinal Detachment (RRD) was present in 13 (0.30%), NRD (accumulation of subretinal fluid in absence of retinal break) in 30 (0.69%) and RETINOSCHISIS in 4 (0.09%) subjects.

Disease	Total	Percentage
RAC	2	0.05%
CHM	7	0.16%
Total Ocular Tumors	9	0.21%

**Table 3:** (Ocular Tumors).

Table 3 reveals that amongst the 9 (0.21%) subjects of Ocular Tumors, Retinal Astrocytoma (RAC) was present in 2 (0.05%) and CHM in 7 (0.16%) subjects

## Discussion

Though Himachal Pradesh is a hilly terrain consisting of different districts, the different districts having different types of geographic and socioeconomic conditions. Most of the people depend upon agriculture as a source of income. There are many rural and backward areas. There is a diversity of culture, language, customs, food habits and way of life. Yet our study represents the patients residing in Himachal Pradesh. This is the first fundus photograph based study to report the prevalence of vitreo-retinal disorders in Himachal Pradesh.

Retinal tears/detachment were a leading retinal disease in study done by Nwosu SN. [6] In another study on the pattern of retinal diseases, retinal detachment was the second largest group of diseases, accounting for 24.5% of the total. [7] In a study on the prevalence and pattern of vitreo-retinal diseases in Nepal, retinal detachment accounted for 0.10% of the cases. [1] In our study, retinal detachment was the less predominant disease. The difference may be due to the sample size or the different geographic zones.

The annual incidence of RRD was 16.5 per 100,000 people, with a peak incidence of 35.4 in the 50-59 years of age group. The incidence of RRD in males was 1.88 times higher than in females. Myopia was found to have a strong association with the cases. [8] The annual RRD incidence was 18.2 per 100 000 people, with a peak incidence of 52.5 per 100 000 people between 55 and 59 years of age. Bilateral RRD rate was 1.67%. [9] A total of 2359 patients with RRD (1336 men and 1023 women) were identified from 2000–2012. The incidence in both genders had an obvious peak at 50–69 years of age, and a secondary peak at 20–29 years in women. [10] From 1999, the annual person based retinal detachment rates increased significantly, from 13.4 in 1999 to 15.4 in 2011. Diabetes mellitus was found to have an association. [11] A total of 1244 cases of retinal detachment were identified during the study period from a population of 5,168,500 yielding an annual incidence of 12.05 per 100,000 population. The age-specific incidence increased to a peak in both sexes in the 60 to 69 year age group. RRD was significantly more frequent in males than in females. [12] In our study, out of the 4323 subjects, RRD was present in 13 (0.30%), NRD in 30 (0.69%) and RETINOSCHISIS in 4 (0.09%) subjects. Age distribution, sex predominance, unilateral/bilateral ocular involvement, annual incidence and associated systemic diseases were not taken in our study.

Forty five patients were confirmed as incident cases of ocular melanoma in the general population cohort. Among these, choroidal melanoma accounted for 86% of them. The right eye was predominantly involved. The incidence of ocular melanoma in the general population cohort increased considerably with age and was similar among men and women. [13] Over the 14 year period of a study, there were 32 patients with microscopically confirmed ocular melanoma. Among 32 uveal melanomas, 27 (84%) cases had choroidal involvement. [14] Retinal hamartomas were seen in 44 of the 100 patients identified as having tuberous sclerosis. [15] Our study was an approximate 5 years study and age distribution or sex

predominance were not taken. Secondly, sample size and the objective of the studies are also not the same.

The findings of my study cannot be compared to, or benchmarked against similar other studies owing to the fact that not much similar study material could be traced on the internet and similar public domains despite my dedicated efforts to this effect. Accordingly, in view of this, it may not be out of place for me to conclude -----. Opinions and value additions from my competent fellow medical practitioners are welcome.

## Conclusion

Rarer retinal disorders also appear to be a public health problem in India. The results of this study gave an insight into the prevalence of such diseases. The present study shall help us in planning the management of such disorders in the hilly state of Himachal Pradesh to reduce the visual morbidity arising out of such disorders. This entails the necessity for accessible comprehensive eye care services, establishment of human resources, screening and awareness of the disease and affordable eye health policy.

## Acknowledgments

We would like to thank all the patients and Department of Ophthalmology, Indira Gandhi Medical College, Shimla for their assistance and support.

**Conflicts of Interest:** The authors declare that they have no competing interest.

**Financial Disclosure (s):** The author(s) have no proprietary or commercial interest in any material discussed in this article.

## Reference

1. Thapa SS, Thapa R, Paudyal I, Khanal S, Aujla J, Paudyal G et al. (2013). Prevalence and pattern of vitreo-retinal diseases in Nepal: the Bhaktapur glaucoma study. *BMC Ophthalmology* 13 (9): 1471-2415.
2. Khan A, Riaz Q, Soomro F, Qidwai U, Qazi (2011). Frequency and Patterns of Eye Diseases in Retina Clinic of a Tertiary Care Hospital in Karachi. *Pak J Ophthalmol* 27 (3): 155-159.
3. Eze BI, Uche JN, Shiweobi JO (2010). The burden and spectrum of vitreo-retinal diseases among ophthalmic outpatients in a resource-deficient tertiary eye care setting in South-Eastern Nigeria. *Middle East Afr J Ophthalmol* 17: 246-9.
4. Karki DB, Malla OK, Byanju RN, Shrestha S (2003). Analysis of 400 cases of posterior segment diseases visiting retina clinic of Nepal eye hospital. *Kathmandu University Medical Journal* 1: 161-165.
5. Nirmalan PK, Katz J, Robin AL, Tielsch JM, Namperumalsamy P, Kim R et al. (2004). Prevalence of vitreoretinal disorders in a rural population of southern India: the Aravind Comprehensive Eye Study. *Arch Ophthalmol* 122(4): 581-6.
6. Nwosu SN (2000). Prevalence and pattern of retinal diseases at the Guinness Eye Hospital, Onitsha, Nigeria. *Ophthalmic Epidemiol* 7(1): 41-8.
7. Teshome T, Melaku S, Bayu S. (2004). Pattern of retinal diseases at a teaching eye department, Addis Ababa, Ethiopia. *Ethiop Med J* 42(3): 185-93.
8. Haga A, Kawaji T, Tsutsumi T, Ideta R, Tanihara H (2017) The Incidence of Rhegmatogenous Retinal Detachment in Kumamoto, Japan between 2009 and 2011. *J Clin Exp Ophthalmol* 8: 647. doi:10.4172/2155-9570.1000647
9. Van de Put MA, Hooymans JM, Los LI. (2013). The Incidence of Rhegmatogenous Retinal Detachment in the Netherlands. *Ophthalmology* 120(3): 616-22.
10. Chen SN, Lian IB, Wei YJ. Epidemiology and clinical characteristics of rhegmatogenous retinal detachment in Taiwan. *British Journal of Ophthalmology*. 2015 Dec 11: bjophthalmol-2015.
11. Shah V, Hall N, Goldacre MJ. Retinal detachment in England: database studies of trends over time and geographical variation. *British Journal of Ophthalmology*. 2014 Nov 19: bjophthalmol-2014.
12. Mitry D, Charteris DG, Yorston D, Siddiqui MR, Campbell H, Murphy AL et al. (2010). The Epidemiology and Socioeconomic Associations of Retinal Detachment in Scotland: A Two-Year Prospective Population-Based Study. *IOVS* 51(10): 4963-8.
13. Huerta C, Rodríguez LG. (2001). Incidence of ocular melanoma in the general population and in glaucoma patients. *J Epidemiol Community Health* 55(5): 338-9.
14. Vodencarevic AN, Jusufovic V, Terzic S, Burgic M, Halibasic M, Sinanovic M. (2016). EPIDEMIOLOGICAL ANALYSIS OF OCULAR MELANOMA IN UNIVERSITY CLINIC CENTER IN TUZLA, BOSNIA AND HERZEGOVINA. *Mater Sociomed*. 28(4): 314-315.
15. Rowley SA, O'Callaghan FJ, Osborne JP. (2001). Ophthalmic manifestations of tuberous sclerosis: a population based study. *Br J Ophthalmol* 85(4): 420-3.

**Benefits of Publishing with EScientific Publishers:**

- ❖ Swift Peer Review
- ❖ Freely accessible online immediately upon publication
- ❖ Global archiving of articles
- ❖ Authors Retain Copyrights
- ❖ Visibility through different online platforms

**Submit your Paper at:**

<https://escientificpublishers.com/submission>