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ORIGINAL ARTICLE

Spectrum of Ocular Diseases at a Military Hospital in Ladakh, North India

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ABSTRACT

The objective of this study was to study the spectrum of patients with ocular diseases, attending a referral military hospital in a remote hilly region of north India. 793 consecutive patients were treated in the Ophthalmology Department over a four year period (Jan 2001 to Dec 2003) at a referral military hospital in Ladakh, Jammu and Kashmir. Males outnumbered females (M: F ratio 3:1), with 56.7 % patients being below 40 years age The spectrum of diseases in the descending order was: refractive errors 33.8%, cataract 21.4%, inflammatory conjunctival diseases 16.8%, pterygium 8.4 %, corneal diseases 5.5%, injuries 3.9 %, diseases of ocular adnexa 3.4%, glaucoma 2.4%, uveitis 2.1%, and miscellaneous 2.3%. Among the cases of blindness, cataract accounted for 85% of cases, refractive errors for 5.5 %, injuries for 5.5 %, corneal opacity for 1.9%, glaucoma for 0.5%, and others for 1.6 %.

Key Words: conjunctival diseases, Ladakh, cataract, refractory errors

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Introduction

Due to its extreme cold climate and its remoteness, Ladakh remains one of the least known parts of the country. Therefore, this geographically large region with a small population (1, 63,000; Census 1991) has remained outside the realm of epidemiological research and statistics, because of which health problems of this region are practically non-existent in literature. This hospital-based study of ocular morbidity was carried out at a referral military hospital that delivers medicare to the locals under the army's goodwill programme, 'Operation Sadbhavana'. This hospital attracts patients from all the regions-central Ladakh, Nubra valley, Suru valley, Zanskar and Changthang of Ladakh, where the whole of the population is permanently located at high altitudes (i.e. above 9000 feet above mean sea level). In Ladakh, human habitations exist at altitudes of up to 14,500 feet under temperature conditions that dip down in some areas to as low as - 60º C in winters. The relative humidity in this region varies between a low of 31-64 %.

Material and Methods

To assess the prevalence of eye diseases in the Ladakhi population, a descriptive study was carried out on the patients attending the Eye Department of our hospital for OPD / indoor treatment over a three year period (January 2001 to Jan 2004). The patients included soldiers of Ladakhi origin, their

dependents, and the civilians of Ladakhi origin only.

A total of 793 patients were treated during this period. Any individual who reported for the second time for the same illness was eliminated for the purpose of assessing the disease prevalence.

Results

Amongst 793 patients, 595 were males and 198 were females. The M: F ratio was 3: 1. The age distribution of the patients is given in [Table/Fig 1] 450 (56.7 %) individuals were below 40 years of age, and 343 (43.3%) were aged 40 years and above. As regards ethnicity, 94.7 % were Ladakhi natives, and 5.3 % were Tibetan refugees settled in Ladakh. The prevalence of eye diseases is given in [Table/Fig 2]. Among the cases of blindness, cataract accounted for 85%, refractive errors for 5.5 %, corneal opacity for 1.9%, glaucoma for 0.5%, injuries for 5.5 %, and others for 1.6 %.

Discussion

High altitude areas are natural stress areas due to low barometric pressure, and consequently, low oxygen concentration [1]. In addition, lowered temperature and low humidity causing dryness of skin, nose and mouth, increased intensity of sunshine causing injury to eyes and skin, and cosmic electric conditions, pose additional problems to health. Although ground reflection of UVB from grass is negligible, it is markedly increased from snow, sand, and concrete [2]. Therefore, UV light exposure in high altitude areas like Ladakh, where vegetations are scarce, terrain is rocky, and large areas remain snow bound for large parts of the year, increases markedly. Since surface reflectivity is an important factor in determining UVB ocular dose [3], exposure to deleterious UVB in Ladakh is high. This increases the risk of cataract formation due to chronic exposure of eyes to UVB that damages the lens protein and DNA [2], and snow blindness in unprotected eyes.

In the studied population, 56.7% patients were below 40 years of age, and 43.3 % were above 40 years of age. The M: F ratio was 3:1, because a majority of our patients constituted serving and ex- soldiers.

Refractive errors accounted for a majority of OPD attendance (33.8 %). Amongst the cases of refractive errors, 64.5 % were myopic with or without astigmatism, if aphakia was excluded.

Cataract constituted for 21.4 %. This is in spite of the fact that 56.7 % of the patients were below 40 years of age. This high prevalence of cataract is supported by another study involving a Tibetan population that reported an overall 60% higher incidence of cataract in Tibet (altitude 4000m) than in Beijing (altitude 50 m) [4]. Amongst the cases of cataract, about 60 % were mature and hyper mature types. As such high cumulative levels of UVB exposure, significantly increases the risk of cortical cataract [5]. Age-wise, 75% of the cases of cataract were above 40 years of age.

Traumatic cataract accounted for 14.4% of total cataracts. This high prevalence of traumatic cataract is an interesting fact in Ladakh. Among the cases of traumatic cataract, a majority of patients were below 20 years of age, and belonged to the regions where a thorny shrub *seabuckthorn* (Leh-berry), grows in abundance in the wild. In the below 20 years age group, 10(71.42 %) out 14 cataracts were traumatic in nature.

Inflammatory conjunctival diseases accounted for 16.8 % of cases, of which about half (8.2 %) were the cases of allergic conjunctivitis only. This problem is seen more commonly and in florid forms in higher altitudes like Changthang (northern plains) region and in Zanskar regions. Pterygium accounted for 8.4% of cases. This figure is lower than the prevalence rate in some of the south Asian countries like Indonesia, where age adjusted prevalence rate of any pterygium was 10.0% [6].

Among the cases of pterygium, 63% cases were bilateral, which is much higher than the 4.1 % rate reported in the above quoted study [6].

About 5% of total cases reported with non-specific complaints like irritation, redness and sensation of a foreign body in their eyes in the absence of any other identifiable eye disease. These cases could be due to high UV exposure and aridity of the region, and therefore needs to be studied separately for correlation with relative humidity; altitude and possible tear film abnormalities.

The prevalence of glaucoma was seen in 2.4 % of cases. A majority of the cases of glaucoma reported in the advanced / absolute stage because of lack of awareness and access to eye care facilities in far-flung areas. Therefore, there is a need for screening of the susceptible population for early detection of glaucoma. However, none of the cases of glaucoma from our study population had reported in the acute congestive stage.

Corneal diseases accounted for 5.5 %, and Uveitis for 2.1%. Ocular injuries accounted for 3.9 %. A majority of the patients suffering injuries were in the younger age group. High altitude retinal haemorrhage (HARH), that sometimes poses a sight-threatening problem in the recent lowlander inductees to the high altitude areas, is practically unseen in the natives. Therefore, any possible natural protection in locals against HARH needs to be studied. The rest of the OPD attendance listed under miscellaneous conditions included diverse conditions like presbyopia, pinguecula, lid abnormalities, retinal conditions and disorders of ocular motility.

Conclusion

In conclusion, refractive errors (33.8%) and cataract (21.4%) account for more than half of the OPD attendance. Among the various forms of cataract, prevalence of traumatic cataract is high (14.4%), with a majority (71.4 %) of them belonging to the below 20 years age group. In addition, a good proportion, about 16.8% of cases suffer from conjunctival inflammatory diseases. About half of them (8.2 %) suffer due to various forms of allergic conjunctivitis. Allergic conjunctivitis is particularly common in the higher altitude regions of Changthang and Zanskar. Prevalence of pterygium is high (8.4 %) in Ladakh where almost two third of cases (63%) suffer from bilateral affliction.

[Table/Fig 1] Age distribution (n=793)

Age in years	Number	(%)
1-19 years	133	(16.77%)
20-39	317	(39.97 %)
40 and above	343	(43.25 %)

[Table Fig 2] Prevalence of eye diseases (n=793)

Diagnosis	number	%
Refractive error	268	33.8
Cataract	170	21.4
Glaucoma	19	2.4
Inflammatory conjunctival diseases	133	16.8
Pterygium	66	8.4
Corneal diseases	44	5.5
Injuries	31	3.9
Nasolacrimal duct obstruction	27	3.4
Uveitis	17	2.1
Miscellaneous	18	2.3

References

[1] Shoene R B, Hackett PH, Thomas H F. High altitude. In: Murray JF, Nadel JA, editors. Textbook of Respiratory Medicine, 3rd ed. Philadelphia: W B Saunders Company, 2000.1915-50.

[2] Andley U. Photooxidative Stress. In: Albert D M, Jacobiec F A, editors. Principles and Practice of Ophthalmology. Philadelphia: W B Saunders Company, 1994; 575-90.

[3] Slinley DH. Physical factors in cataractogenesis: Ambient ultravoilet radiation and temperature. Invest Ophthalmol Vis Sci 1986,27:781.

[4] Hu TS, Zhenm Q, Sperduto RD, et al. Age–related cataract in Tibet eye study. Arch Ophthalmol 1989; 107:666.
[5] Taylor HR. The biological effects of UVB on the eye. Photochem Photobiol 1989; 50:489.
[6] Gazzard G, Saw SM, Farook M, et al. Pterygium in Indonesia: prevalence, severity and risk factors. Br. J Ophthalmol. 2002; 86(12): 1341-6.