



Effects of Cold Preventive Measures on Eyes in Extremely Cold Areas – First Hand Study

KEYWORDS

OCULAR CHANGES, EXTREMELY COLD AREAS, POLLUTION

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ABSTRACT Air pollution is a common problem of universe. It is increasing at alarming rates & is a difficult & dangerous problem. At extremely cold remote areas, in order to prevent cold, various heating arrangements are done. These also lead to air pollution and effects on eyes in form of eye irritation, lacrimation, decreased visibility, tear film abnormalities, etc. We report our unique experience on eyes in these circumstances.

INTRODUCTION

Air pollution is a common world wide problem which has evolved much interest in recent years. It has hazardous effects on various body systems including the eyes. It is considered that air pollution is mainly limited to urban areas & mainly occurs due to vehicle emissions, factory wastes. But our troops located & guarding our borders in extremely cold areas where temperature ranges below -10 to -30 C also suffer from air pollution. This pollution comes from the body warming aids using coal, kerosene & wood as most of the places don't have electricity. In addition to pollution, these warming aids called Bukharis sometimes burst leading to perforating the injuries to eyes.

PATIENTS & METHODS

We conducted our study on 400 troops located in extremely cold climates between Feb 2006 – Apr 2008. 3 patients came to the hospital due to perforating ocular injuries due to burst to bukharis. The troops were given a questionnaire (Table1) & asked to tick the problems faced. In, addition detailed ocular examination was done. We report our experience.

RESULTS

A total of 400 soldiers & 3 patients were taken up for study between Feb 2006 – Apr 2008 for studying effects of bukharis on eyes in extreme cold areas. Their mean age was 27 years (range 19-54 years). All were male. Out of 400 soldiers, 186 (46.5%) had complaints of dry sensation in eyes, 173 (43.25%) complained of watering, 64(16%) redness of eyes, 62(15.5%) complained of pain in eyes. No patients complained of dimness of vision. (Table 2).

DISCUSSION

Indoor air pollution is commonest cause of eye problems in cold areas¹.

There are two types of air pollutants .Primary pollutants can be either Fine particles less than 100 or Coarse particles more than 100 . These are Compounds of sulphur, nitrogen, carbon & halogens. these sometimes include Radioactive Compounds. Secondary pollutants include peroxyacetyl nitrates (PAN) , sulphuric acid mist and nitrous oxide.

Eye changes due to air pollutants include Reduced visibility due to scattering of light from surfaces of airborne particle and , Eye irritation which is a symptom complex of redness, swelling, watering & dry sensation, Tissue changes occur due to decrease in tear lysozyme³ & decrease in mucus producing goblet cells⁴ Bilchik and coworkers have

reviewed the ocular effects produced by CO intoxication⁵. Basu Pk and coworkers have studied the effect of air pollutants on the oculocardiac reflex⁶.

CONCLUSION

We have seen that air pollution can produce very hazardous effects on eye.. The very purpose of writing this article is to let ophthalmologists know that there is a lot of scope for research in this field.

TABLE 1

Name	Age	OCULAR SYMPTOMS
		<ul style="list-style-type: none"> • Pain • Redness • Swelling • Watering • Dry sensation • Reduced vision

TABLE 2

OCULAR COMPLAINT	NO OF PEOPLE
DRY SENSATION	186
WATERING	173
REDNESS	64
PAIN	62
DIMNESS OF VISION	-

Note: many people had multiple symptoms

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