Editorial

The Challenge of Microbial Keratitis in Pakistan

Microbial keratitis is a common sight threatening disease which occurs in all parts of the world.

Statistics of corneal blindness from different countries show a range from 5-77%[1].

The disease can cause a lot of pain, discomfort and lead to serious visual disability if not treated properly. The disease poses serious challenges to both public health and clinical ophthalmologists in terms of prevention, diagnosis, treatment and final visual rehabilitation.

The pathogenic factors contributing to the causation of microbial keratitis include exogenous factors, altered host tissues, and the host response. The exogenous factors include invasion by microbes like bacteria, fungi, viruses and rarely some parasites. An initiating event in the form of trauma (physical, chemical or toxic) which results in break-down of epithelium integrity usually precedes the microbial invasion of the corneal tissue. The trauma may be macro or micro such as produced by contact lenses wear[2].

The altered host tissue is affected by exposure due to lid deformity, tear film abnormalities, post radiation keratitis, corneal epithelial and stromal edema and the role of the local immune mechanisms. Other influences are altered corneal tissue secondary to diabetes as well as chronically diseased eyes such as following extensive surgery and other debilitating diseases or dry eyes syndrome. The role of host response is less specific or less well understood, but is affected by the degree of inflammation, hypersensitivity factors, corneal edema and the release of enzymes such as collagenase, either by corneal tissue or the invading inflammatory cells.

The sequential progression in the pathogeneses of bacterial corneal infections includes adhesions of the organism to the superficial cornea, entry of the organism into the corneal tissue, multiplication and spread of the organism. The host inflammatory response is then evoked in which the organism encounters phagocyte cells and the host immune response. Recent reports have described an apparent increased risk of development of bacterial keratitis in patients with extended wear soft contact lenses. The organisms in these cases are either pseudomonas or acanthamoeba.

A fairly large number of fungi have been isolated from corneal ulcers. A review of published reports shows that the fungi encountered in cultures of material obtained from corneal ulcers mainly belong to the genera Aspergillus, Fusarium, Penicillium and Candida.

For diagnostic purposes, it is recommended that meticulous scrapings of the infiltrate be performed including the base and edges of the ulcer or that a biopsy of the stromal abscess is taken. The material obtained from such scrapings should be inoculated on to multiple media like blood agar, chocolate agar, anaerobic media and Sabouraud's agar. Material from the scrapping should be stained with Gram's, Giemsa, Ziel-Neilson and other special stains.

For fungal isolation, scrapping should be treated with 10-20% KOH. In patients with culture proven keratitis, initial scrapings treated with KOH or stained with Gram's or Giemsa or other stains are diagnostic in 80-88% of cases. Recently PCR has become an important diagnostic possibility[3].

The results of the Gram's stain can be used to select the initial therapy[4].

Therapy of microbial keratitis should be directed towards the offending organism in the form of appropriate antibiotics and antifungal agents. Other supplementary therapy includes non-steroidal anti-inflammatory agents, Steroids, Atropine and Anti-collagenase[5].

Surgical intervention in the form of simple epithelial debridement of the ulcer, conjunctival flap, lamellar keratectomy, Keratoplasty and Tarsorrhaphy may at time become necessary[6].

Non-availability of the corneal donor material is a problem in salvaging the vision. Keratoplasty is not only an effective method in dealing with the indolent corneal infection but is also of importance in treating the complications. It is the only hope in dealing with a corneal opacity obstructing vision. Frequently used Keratoplasty can thus help in saving many eyes, structurally and functionally, which are invariably lost at present[7].

The pattern of microbial keratitis in a community largely depends upon the socio-economic status, the degree of development, access to medical services, personal and community hygiene, the availability of clean water and other basic requirements for living, awareness of the problem, the general nutritional status of the community, the prevalence of other infectious diseases, climate, and high frequency of predisposing factors like trauma. It can be seen that the problem of corneal blindness, specially the infective part is largely preventable[8].

There are no community health surveys to indicate true incidence of the disease in our country. Over the counter sale of medicines and indiscriminate use of steroids and antibiotics is an important risk factor for microbial keratitis. Communities need to be made aware about the principles of prevention of ocular ocular trauma and ocular infections. The ophthalmic technicians and lady health workers are two important cadres which can help in the primary prevention of the disease. There is scarcity of ocular microbiological services. Although the National Program for Prevention and Control of Blindness in Pakistan has provided equipment for setting up microbiology laboratories in the 7 Centers of Excellence in the country, the services are not yet established.

In order to address the issue of microbial keratitis at national level, we would like to submit the following recommendations.

1. Establish regional Centers of Ocular Pathology.
2. Initiate a Health Education Campaign on prevention of ocular trauma and ocular infection.
3. Establish a national register for ocular trauma.
4. Establish at least four Eye Banks of International standards, one in each province to solve the problems of availability of corneal donor material.

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