

## EDITORIAL

# Increasing Trend of Swimming and Water Sports in Pakistan Causing Ear Related Problems

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Swimming and other water sports are the important human activities to keep them physically fit and vigorous. Pakistan has a population of over 183 million<sup>1</sup> and millions of people are involved in swimming and other water sports activities in Pakistan. This trends is increasing tremendously in the recent past. There are many reasons for this increasing trend but following are the top most factors:

- Increasing urbanization.
- Increasing obesity and thus more people are involved in such activities.
- Increasing facilities for swimming and water sports.

At one end, these activities are very rewarding for their overall physical health but on the other hand it is causing higher incidence of different health related problems. There are many health risks related to the swimming and water sports such as the risk of drowning, trauma and injuries by microbiological, chemicals and physical agents. Among all these health related problems, ear is one of the body organ that is affected most. When a person's ear is exposed directly to water without protection, it can lead to many ear problems specially infections and trauma<sup>2</sup>. The standards relating to bathing water is a burning issue even in the developed world also. Many studies have shown that swimming in the fresh water or sea water that meet the current standard, may also lead to ear problems<sup>3</sup>. In Pakistan, many of the swimming pools and water sport parks do not follow the international standards. Secondly swimming and diving in river, lake, beach or sea is very common in our country. The public awareness about the ear protection during these water activities is also very inadequate in our region and most of them do not make use of these protective measures.

The external, middle and inner ear are all susceptible to it but some of the common ear problems related with swimming and water sports are:

- Otomycosis
- Diffuse otitis externa
- Exostosis
- Traumatic ear drum perforation
- Otitis media

• Sudden sensori-neural hearing loss and vertigo  
Otomycosis and diffuse otitis externa are considered as the most common ear problems associated with swimming and water sports. Cerumen has a pH of 4 to 5 and so it suppresses both bacterial and fungal growth in the external auditory canal. The lipid content of the cerumen protects the surface of the epithelial lining of external auditory canal and prevents maceration and breakdown of the epithelium. Aquatic sports, including swimming and surfing, because of their repeated exposure to water result in removal of cerumen and drying of the external auditory canal<sup>4</sup>. Introduction of extraneous moisture from the swimming increases maceration of the skin of the external auditory canal, encourages destruction of the protective barrier and creates condition favourable for bacterial and fungal growth. The risk of otitis externa is reported to be 5 times greater in swimmers as compared to non-swimmers<sup>5</sup>.

90% of patients suffering from otomycosis had a history of water entering their ears, either during swimming or bathing<sup>6</sup>. The role of heat and humidity in the development of otomycosis has already been endorsed in the literature. Otomycosis is caused by some species of the saprophytic fungi, which abound in nature and/or form a part of the commensal flora of healthy external auditory canal. *Aspergillus niger*, *A. flavus*, *A. fumigatus*, *Allescheria boydii*, *Scopulariopsis*, *Penicillium*, *Rhizopus* and *Absidia* are the most common agents of otomycosis. *Candida* species, especially *C. albicans* is a part of human normal flora that causes otomycosis<sup>7</sup>.

Exostosis is a common benign tumour of the bony part of the external auditory canal. Prolonged exposure to cold water in activities like swimming increases the risk of developing exostosis and also increases the severity of the existent condition<sup>8,9</sup>. Scuba diving, water skiing and other water sports are the leading cause for traumatic ear drum perforation and are considered as a major cause of non-explosive blast injury to the ear<sup>10</sup>. Persons with previous history of recurrent otitis media, scarred and thin ear drum and poor Eustachian tube functions are at increased risk of developing this condition. All types of water sports are not advisable for a person who has ear drum perforation with active discharge. Swimming with proper ear protection can be advised to patients who had undergone mastoidectomy or tympanoplasty operations. There is controversy whether to allow swimming with proper ear protection or not, in children who had undergone myringotomy with grommet insertion. Sudden sensori-neural hearing loss and vertigo can occur after diving because of the rupture of the round window or oval window<sup>11</sup>.

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Following are the simple advices to persons who are regularly engaged in different water activities to prevent these ear problems and avoid complications:

- Use proper protective devices like ear plugs and swimming caps during water activities.
- Swimming should be done only in clean water like properly chlorinated swimming pools and non-polluted beach, river and lake. Swimming in polluted water should be avoided strictly.
- Keep the ear canal dry as it decreases the incidence of infection in the ear canal.
- The ear canal can be dried with hair dryer after swimming.
- Ear canal drying with a cotton bud should be avoided as it causes trauma to the ear canal with breach in the protective barrier against infection.
- Diving should always be done very cautiously and with proper protective devices.
- Patients having tympanic membrane perforation with active ear discharge should refrain from all sort of water activities.
- Children with grommet or ventilation tube in place can enjoy surface swimming in properly chlorinated swimming pool with protective device but diving and deep swimming should be avoided.

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