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Editor

OCCUPATIONAL NOISE INDUCED HEARING LOSS: AN UNDERRATED DIAGNOSIS

Noise induced hearing loss (NIHL) is a sensorineural hearing loss due to repeated noise exposure over a long duration or sudden exposure to very loud intensity sounds like gunshots or bomb blasts resulting in hearing loss which can be gradual or sudden in onset. The sound level below 80 dB is a less likely cause for the hearing loss but exposure to sound level of 130 dB or more would definitely cause hearing loss even in short exposure. Our normal speech is usually at sound intensity level of 50-65dB. The usual city noise is around 80dB, airplane and helicoptors at near distance is 105dB, rock concerts, gunfires and fire cracks produce sound of 110-130dB. Exposure to these sounds is harmful to the ears and causes temporary or permanent structural damage in the hearing mechanism of the ears. Initially, NIHL causes temporary threshold shift, recovering within few hours whereas if there is repeated sustained exposure, the threshold shift becomes permanent i.e. permanent threshold shift.

Among the various causes of noise induced hearing loss; occupational NIHL accounts for nearly 16% of the cases.[1] The major burden of this prevalence of NIHL is more in the developing countries. NIHL in these patients with occupational noise exposure depends on the duration and intensity of noise. The patients suspected with occupational noise induced hearing loss have history of working in the loud machines, chronic traffic noise exposure, regular exposure to loud music or working in a call center etc. The symptoms development in the patient are variable in both severity and duration. The noise exposure in the patients can cause temporary hearing loss which can revert back if the exposure is less or can be permanent hearing loss where the damage won't revert back. Evaluation by audiogram in early or moderately advanced NIHL shows a typical notch at 4 kHz which spreads to 3 kHz and 6 kHz with some recovery at 8 kHz.

Noise in the environment is measured in terms of A-weighted sound pressure levels. This noise exposure is quantified after converting an average A-weighted SPL to 8-hour equivalent level. The risk of NIHL can be minimized if noise level is reduced to below 80 dB (A).[2] WHO has mentioned an A-weighted equivalent 8-hour SPL of 85-90dBA to be moderately high and >90 dBA as high noise exposure.[3]

Pertaining to our country also there is increasing risk of exposure to noise specially in the cities. The primary cause of hearing loss in our country too is exposure to hazardous noise levels in the work place. Occupational noise-induced hearing loss is one of the significant but under rated problem in the developing countries like ours. Traffic police, industrial workers are few important occupations with the risk of noise exposure in our country. But due to the relatively less published articles in NIHL, there is a lack of robust data for quoting the prevalence of NIHL in our country. Despite being one of the growing causes of deafness in the developing world like ours, the problem is less addressed in research too as there is paucity of literatures on NIHL in Nepal. Research conducted in the metal workers in the mid-western Nepal showed prevalence of NIHL as 30.4% as compared to those 4.1% in

people without noise exposure.[3] Another study also conducted in midwestern Nepal revealed the prevalence of NIHL in 31% of carpenters and 44% of sawyers.[1] Study done in traffic police showed very high prevalence of NIHL of 66.4% near the capital city of the country.[4]

Once patients are suspected to have noise induced hearing loss, the treatment modality depends on the symptoms. Foremost is to decrease the further noise exposure, change the work practice in occupation hazards. The patients might also need psychological counselling. If the patient has hearing loss, they might need hearing aids.

But best is the prevention of striving not to develop noise induced hearing loss by being aware of the risks of noise exposure. In occupational workplace the employers should do the employees hearing check up at the start of their job and in between too at fixed intervals. The work hour recommended is for 8 hours per day if the sound level of noise exposure is 85dB. According to National Institute of Occupational Safety and Health this limit is 85dBA. Another area that needs to be looked upon is the traffic police who get exposed to loud noise from vehicle horns. Their hearing needs to be monitored by pre and post exposure to noise. On the personal front the patients should wear ear plugs, ear muffs etc. to protect oneself from the loud noise exposure.

Developed countries where lots of litigation cases are filed in diagnosing noise induced hearing loss, have standard reference tables of hearing loss also that aid in the diagnosis of noise induced hearing loss. But in developing countries there is lack of reference tables in the industries and also lack of occupational health and safety coverage. There is a need of maintaining the pre-exposure hearing level test and at regular intervals to detect and diagnose the occupational NIHL and to implement the laws of permissible noise levels for the high-risk groups exposed to occupational noises. Overall, there is a need of greater awareness about the effects of occupational noise exposure to hearing which can be prevented.

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