

Erratum

Inner hair cell ribbon synapse plasticity might be molecular basis of temporary hearing threshold shifts in mice: Int J Clin Exp Pathol 2015; 8: 8680-8691

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Received November 13, 2015; Accepted January 10, 2016; Epub February 1, 2016; Published February 15, 2016

Abstract: Recent studies have reported that noise exposure at relatively low intensities can cause temporary threshold shifts (TTS) in hearing. However, the mechanism underlying the TTS is still on debate. Here, we report that an acoustic stimulation (100 dB SPL, white noise) induced TTS in mice, with the maximal ABR threshold elevations seen on the 4th day after noise exposure. On the other hand, there were no significant morphological changes in the cochlea. Further, there were paralleled changes of pre-synaptic ribbons in both the number and postsynaptic density (PSDs) during this noise exposure. The numbers of presynaptic ribbon, postsynaptic density (PSDs), and colocalized puncta correlated with the shifts of ABR thresholds. Moreover, a complete recovery of ABR thresholds and synaptic puncta was seen on the 14th day after the noise stimulations. Thus, our study may indicate that noise exposure can cause a decline in cochlear ribbon synapses and result in consequent hearing loss. The reduction of synaptic puncta appears reversible and may contribute to hearing restoration in mice after noise exposure.

Keyword: Noise exposure, hearing impairment, ribbon synapse plasticity, inner hair cell

The correct **Figures 2A, 3A-E, 4A and 6** are provided. On page 8687, results line 6, 9.58 should be 29.58.

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Noise induced hearing loss due to change of ribbon synapses

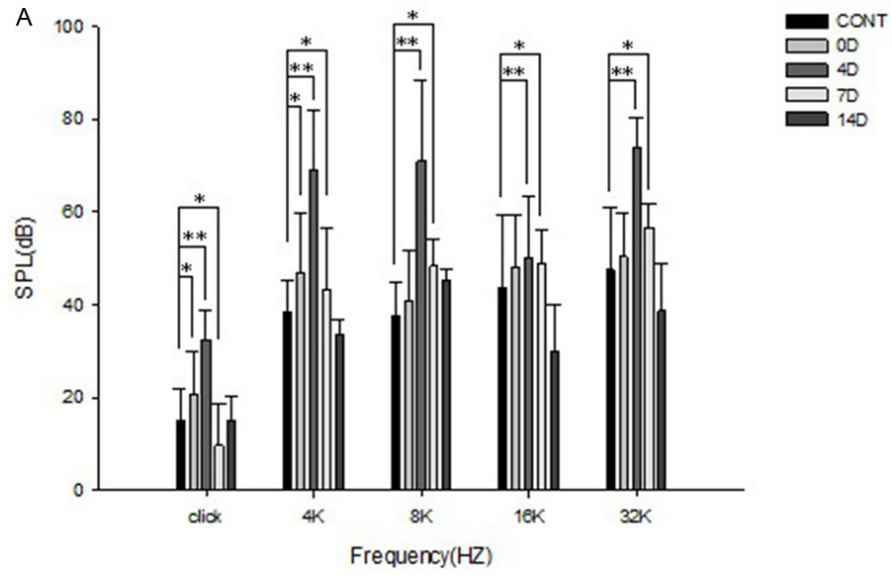


Figure 2A. Temporary threshold shifts (TTS) caused by noise exposure.

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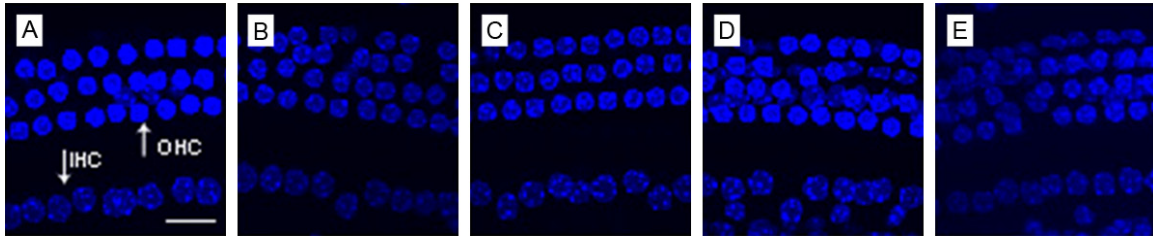


Figure 3. A-E. Morphology of cochlear hair cells and noise exposure.

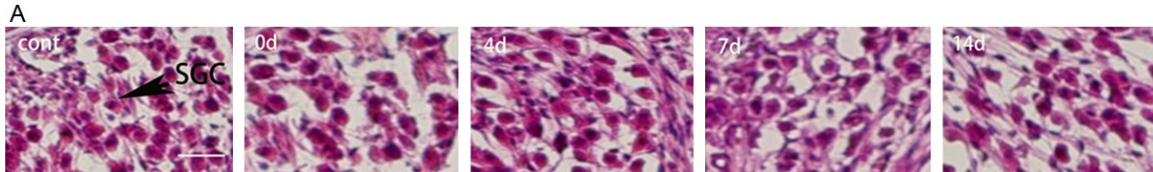


Figure 4. A. Morphology of spiral ganglion cells (SGCs) and noise exposure.

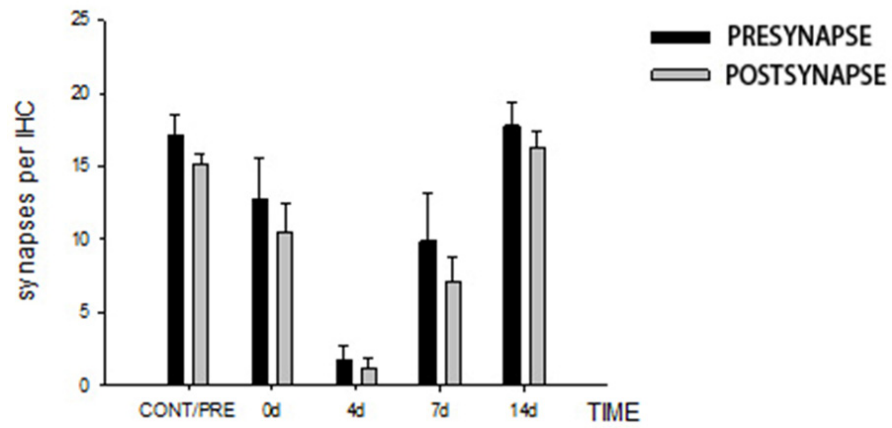


Figure 6. Parallel changes of synaptic ribbons and PSD95 in response to the noise exposure.