

The middle ear immune defense changes with age - DTU Orbit (08/11/2017)

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Otitis media is a common disease in childhood. In adults, the disease is relatively rare, but more frequently associated with complications. Possible reasons for this discrepancy are age-related differences in pathogen exposure, anatomy of the Eustachian tube and immune system. The objective of this study was to analyze the relationship between age and the mucosal immune system in the middle ear. It is hypothesized that genes involved in the middle ear immune system will change with age. A comprehensive assessment of these genetic differences using the techniques of complementary DNA has not been performed. Complementary DNA microarray technology was used to identify immune-related genes differentially expressed between the normal middle ear mucosa of young (10 days old) and adult rats (80 days old). Data were analyzed using tools of bioinformatics. A total of 260 age-related genes were identified, of which 51 genes were involved in the middle ear mucosal immune system. Genes related to the innate immune system, including alpha-defensin, calcium-binding proteins S100A9 and S100A8, were upregulated in young rats, whereas genes related to the adaptive immune system, including CD3 molecules, zeta-chain T-cell receptor-associated protein kinase and linker of activated T-cells, were upregulated in the adult. This study concludes that the normal middle ear immune system changes with age. Genes related to the innate immune system are upregulated in young rats, whereas genes related to the adaptive immune system are upregulated in adults.

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