Vestibular schwannoma etiology

Vestibular schwannoma (VS) is a histologically benign schwann-cell sheath tumor that usually arises from of the inferior division of the vestibular nerve (not the cochlear portion). VSs arise as a result of the loss of a tumor suppressor gene on the long arm of chromosome 22 (in sporadic cases this is a somatic mutation; in neurofibromatosis Type 2 (NF2) this is either inherited or represents a new mutation that may then be transmitted to o spring).

Although the appearance of juvenile nasopharyngeal angiofibroma and vestibular schwannoma may be coincidental, the occurrence of these tumors in the same individual may suggest an association with regards to their pathogenesis [1)].

Risk Factors

There have been no definite risk factors identified.

Results suggest an elevated risk among individuals who have been exposed to occupational noise when some subgroup analysis are conducted. Leisure noise in particular seems to play a significant role in the development of acoustic neuroma. However, due to the heterogeneity among the included studies, this conclusion should be interpreted with cautions, even though the continuous long-term consequences should not be ignored [2)].

An increased risk of VS has been shown to positively correlate with mobile phone use of at least 5 years' duration, but this finding is still controversial.

There was little evidence of an increase in the risk of meningioma, VS, or parotid gland tumors in relation to mobile phone use [3)].

see Neurofibromatosis type 2 Related Vestibular Schwannoma.

Virus

To investigate if viruses are involved in the pathogenesis of vestibular schwannomas (VS), we have screened biopsies from VS patients using different molecular techniques. Screening for the presence of known viruses using a pan-viral microarray assay (ViroChip) indicated the presence of several viruses including human endogenous retrovirus K (HERV-K) and human herpes virus 2 (HHV2). But with the exception of HERV-K, none of the findings could be verified by other methods. Whole transcriptome sequencing showed only the presence of HERV-K transcripts and whole genome sequencing showed only the presence of Epstein-Barr virus, most likely originating from infiltration of lymphocytes. We therefore conclude that it is less likely that viruses are involved in the pathogenesis of vestibular schwannomas [4)].

1)
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