A Case for a Viral Cause for Meniere's Syndrome
Compiled by PapaJoe on Menieres.org
This document can be found at http://www.papadisc.com/Menieres_Etiology_Viral.pdf
Companion document: http://www.papadisc.com/Menieres_Efficacy_AntiViral.pdf

These forty studies were compiled from PubMed (http://www.ncbi.nlm.nih.gov/pubmed), a NIH database that contains a listing of peer-reviewed scientific and medical studies. These are the relevant studies found when searching for "virus" and "meniere" in papers that include an abstract. Of these forty papers, thirty supported a viral etiology for Meniere's, four were equivocal, and six did not support a viral cause.

Papers Supporting a Viral Etiology (30)
http://www.springerlink.com/content/r647171n26547823
"Ear Surgery" - Pages 89-98
Surgery for Vertigo
• The cause of most recurrent vestibulopathies is viral. The syndromes known as vestibular neuronitis, Ménière's disease, and benign paroxysmal positional vertigo account for the majority of these presentations.
• These recurrent vestibulopathies are viral neuropathies caused by neurotropic viruses (e.g., Herpesviridae family).
• Initial treatment of these vestibulopathies is the use of antiviral agents orally or by intratympanic administration.
• Ablation therapy is used when the antiviral approach fails to control vertigo.

Patients with Menière's disease possess IgE reacting with herpes family viruses.
CONCLUSIONS: (1) Most patients with Meniere's disease possess virus-specific IgE in their serum samples; (2) four viruses of the herpes family are capable of inducing such IgE-mediated sensitization; and (3) latent virus-specific, IgE-mediated inflammation may be an important factor in the initiation and/or sustenance of Meniere's disease.

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Evidence for a viral neuropathy in recurrent vertigo.
The concept that reactivation of latent neurotropic viruses (i.e. Herpesviridae group) in the vestibular ganglion is responsible for recurrent vestibulopathies is presented. A similar histopathologic degeneration of vestibular ganglion cells in vestibular neuronitis (VN), Ménière's disease and benign paroxysmal positional vertigo is presented to support this concept. The clinical response (relief of vertigo) to the administration of antiviral medication in these syndromes provides practical evidence of a viral neuropathy in patients with recurrent vertigo. Relief of vertigo after this treatment was 90% in VN, Ménière's disease and VN. The relief of BPPV was 66%.

http://white.zero.jp/ms-7/english1.htm
pdf files from two studies support Acylovir therapy for Meniere's Disease.
From the first study, pdf file #4: "there was a significant relationship between effectiveness of ACV therapy on MD and duration of the disease"
From the second study, pdf file #2: "Between October 1990 and 1997, I have treated 201 patients with MD administering ACV 2,000mg/day for the average period of two weeks. The effectiveness was shown in more than 80% of MD patients effective and markedly effective."

Ménière's disease is a viral neuropathy.

Morphological and clinical evidence supports a viral neuropathy in Ménière's disease (MD). Quantitative examination of 11 sectioned temporal bones (TBs) from 8 patients with a history of MD revealed a significant loss of vestibular ganglion cells in both the endolymph hydropic (EH) and non-EH ears. Transmission electron microscopy of vestibular ganglion cells excised from a patient with MD revealed viral particles enclosed in transport vesicles. Antiviral treatment controlled vertigo in 73 of 86 patients with vestibular neuronitis (85%) and 32 of 35 patients with MD (91%).


Herpes simplex virus and Meniere's disease.
Laryngoscope. 2003 Sep;113(9):1431-8.
CONCLUSIONS: HSV is more commonly isolated from vestibular ganglia of patients with Meniere's disease than the general population. The routine histologic preparation of formalin fixation and paraffin embedding significantly altered the quantity of virus detected though not in a predictable manner. The study provides supportive evidence for a viral etiology in Meniere's disease.


Detection of viral DNA in the endolymphatic sac in Ménière's disease by in situ hybridization.
From the statistical analysis, it can be postulated that VZV infection in early childhood may reach the ES and play a role in the pathogenesis of Ménière's disease (p = 0.0235). The double infection with both VZV and EBV tended to be another candidate for the pathogenesis of Ménière's disease (p = 0.0557).


Vestibular nerve pathology in cases of intractable vertigo: an electronmicroscopic study.
The vestibular nerves were found to be histologically normal in lesions primarily involving the end organ such as most early Meniere's disease cases, benign paroxysmal postural vertigo (BPPV), and mild labyrinthine concussion. Vestibular nerve degeneration was seen with advanced Meniere's disease, severe labyrinthine concussion, and with vascular loops in the internal auditory canal. Herpes zoster involves Scarpa ganglion in herpes zoster oticus. Viruses were found in the nuclei of vestibular nerve cells in a patient with delayed hydrops.


Herpes simplex virus antibodies in the perilymph of patients with Menière disease.
CONCLUSIONS: Our results show the presence of HSV IgG in the perilymph of patients with Ménière disease and support the hypothesis that HSV may play an important role in the etiopathogenesis of Menière disease.


Detection of viral antigen in the endolymphatic sac.
These findings suggest that the virus invades the ES but is impeded by an immune defense mechanism under normal conditions. Since disease may alter host defenses, further studies are warranted to study the relationship between HSV and patients with Meniere's disease.


Viruses and vestibular neuritis: review of human and animal studies.
There is increasing evidence in man and animals that several human viruses can damage the vestibular labyrinth. Clinical and serologic studies of patients with vestibular neuritis suggest that the viruses may play a role in the pathogenesis of this disease. Temporal bone studies of patients dying after vestibular neuritis have found maximal damage in the distal branches of the vestibular nerve. These changes are felt to be consistent with a viral etiology.


Ménière's disease and antibody reactivity to herpes simplex virus type 1 polypeptides.
CONCLUSION: The HSV-1 antibody response found in patients with Ménière's disease may indicate viral reactivation and denotes the importance of further studies on the role of infectious agents in this disease.
Evidence of persistent viral infection in Meniere's disease.
Aspects of humoral and cell-mediated immunity that might characterize the continuation of symptoms in 25 patients with chronic Meniere's disease were examined. We found significant elevations of both humoral and cellular immune responses to viral antigens of herpes simplex I, varicella-zoster, rubella, and cytomegalovirus. Serum immunoglobulins were quantitatively abnormal in 24 of 25 patients, without a consistent pattern. These immune responses may be linked to persistent viral infection in chronic Meniere's disease.

Meniere's disease as a form of cranial polyganglionitis.
Although endolymphatic hydrops is generally considered to be the most prominent factor in the etiology and pathology of Meniere's disease, we have concluded that this condition more probably represents a polyganglionitis caused by the herpes simplex virus with secondary hydrops changes. The wide range of symptoms occurring in the Meniere's disease complex is illustrated in seven selected cases which support this conclusion. Vestibular nerve section can stabilize hearing and relieve episodic vertigo by removing the locus of viral infection and precluding recurrent activation.

The three faces of vestibular ganglionitis.
We present temporal bone and clinical evidence that common syndromes of recurrent vertigo are caused by a viral infection of the vestibular ganglion. In the present series, histopathologic and radiologic changes in the vestibular ganglion and mental ganglion were consistent with a viral inflammation of ganglion cells in cases of Meniere's disease, benign paroxysmal positional vertigo, and vestibular neuronitis.

Do viruses cause inner ear disturbances?
In conclusion, VZV, Coxsackie virus B5 and influenza B virus may be the main causes of inner ear disorder. The spiral and Scarpa's ganglion are potential sites harboring viral DNA for possible latent infection.

Herpesvirus DNA in peripheral blood mononuclear cells of some patients with Meniere's disease.
Herpes simplex virus-1 (HSV) or varicella zoster virus (VZV) DNA was detected by nested polymerase chain reaction in peripheral blood mononuclear cells of patients with Meniere's disease (one of 28 patients for HSV-1, 2 of 28 patients for VZV) during acute illness (within 5 days after onset). On the other hand, neither HSV-1 DNA or VZV DNA was detected in PBMCs of 50 age- and sex-matched healthy individuals and 50 pregnant women. These findings may imply that reactivation of HSV-1 or VZV may be associated with the development of some cases of Meniere's disease.

Investigation of Human Archival Temporal Bones for the Presence of Herpes Simplex Virus in the Endolymphatic Sac and Cranial Ganglia in Disease and Normal Temporal Bones.
Emam Saleh MD and Fred H. Linthicum Jr. MD
The results of this study show a strong association of HSV in the endolymphatic sac and, some cranial ganglia, of patients with Ménière's disease.

Etiology, pathophysiology of symptoms, and pathogenesis of Meniere's disease.
Various factors associated with the phenomenon of hydrops include functional or anatomic obstruction of endolymphatic flow, malabsorption of endolymph, genetic anomalies, vasodilation, allergy, viral infection, and autoimmunity.

Histopathologic findings in Meniere's disease.
Otolaryngol Head Neck Surg. 1995 Jan;112(1):90-100
The etiopathogenesis of Menière's disease has remained controversial since the early 1900s. Many investigators have studied the histopathology of the inner ear in patients with this disorder. Three basic pathologic mechanisms have emerged: fibrosis of the endolymphatic
sac and vestibular epithelia, altered glycoprotein metabolism, and inner ear viral infection. This article reviews the current understanding of these three basic pathologic processes.

Retrospective and prospective studies of patients with Cogan I syndrome
Laryngorhinootologie. 1994 Dec;73(12):662-6
All patients had increased IgA-levels against varicella zoster virus (V2V) indicating a reactivation.

Cochlear hearing loss and viral infection.
Acta Otolaryngol. 1979 Mar-Apr;87(3-4):247-54
Our findings indicate a reversible sensorineural hearing loss to be part of a viral-induced meningoencephalitis and cranial polyneuropathy.

Meniere's disease study: three-year progress report.
Preliminary immunologic viral investigation suggests the possibility of viral etiology in the remaining group considered idiopathic.

Vertigo drug therapy--merely drug vertigo? Vertigo from the pharmacologic viewpoint
Vertigo drug therapy is indicated only in few types of vertigo. A causal therapy is possible for infections of the inner ear by antibiotics or antiviral drugs.

Recurrent vestibulopathy: third review.
We think that periodic reduction of afferent discharge activity in one vestibular nerve is the mechanism of the episodes, and virus the probable cause.

The development of endolymphatic hydrops following CMV inoculation of the endolymphatic sac.
CMV then, can infect cells of the endolymphatic sac resulting in hearing loss and endolymphatic hydrops. The immune response to CMV in seropositive animals is protective, but is associated with endolymphatic sac inflammation.

http://www.ncbi.nlm.nih.gov/pubmed/2635537
Serovirological study of vestibular neuronitis.
Seventeen out of 36 paired cases showed significant change in serum viral antibody titer (HSV, 2 cases; CMV, 1 case; EBV, 7 cases; rubella, 2 cases; adeno., 2 cases; influ. A, 1 case; influ. B, 2 cases). It was assumed that infection caused by these detected viruses played an important role in the onset of vertigo in each case.

Speculation into the etiologic role of viruses in the development of Bell's palsy and disorders of inner ear dysfunction: a case history and review of the literature.
It has long been postulated that Bell's palsy and a number of inner ear disorders may have as their basis a common underlying viral etiology. The change from one recognizable inner ear disorder into another is not unusual... Although difficult to prove, support for this continuum theory is reviewed, taking into account known viral involvement in other cranial nerves and various histopathologic findings from disorders involving the inner ear and facial nerve.

Inner ear and facial nerve complications of acute otitis media with focus on bacteriology and virology.
Acta Otolaryngol. 2006 May;126(5):460-6.
Although the number of patients in this study is relatively low our findings show that inner ear complications and facial palsy due to AOM can be of both bacterial and viral origin.
Randomized double-blinded, placebo-controlled clinical trial of famciclovir for reduction of Ménière's disease symptoms.


SIGNIFICANCE: Famciclovir may suppress the fluctuation of hearing in Meniere's disease, but had a minimal effect on vertigo or dizziness symptoms in this study. The probable multifactorial etiology in Meniere's disease requires that further studies be conducted to determine the effects of antiviral medications.

Viral culture and electron microscopy of ganglion cells in Meniere's disease and Bell's palsy.

Acta Otolaryngol. 1978 Sep-Oct;86(3-4):269-75

At present there is no proof that viruses are present in Scarpa's or geniculate ganglions but the possibility remains that the inclusion bodies observed might be viruses inactivated inside the ganglion cells.

Incidence of virus infection as a cause of Meniere's disease or endolymphatic hydrops assessed by electrocochleography.


In patients, the IgG titre against VZV and ADV were significantly higher than in the control (schwannoma) group. However, no correlation was found between the IgG levels against ADV and VZV with the SP/AP ratio. Neurotropic viruses such VZV and ADV may play a role in the pathogenesis of MD, despite the absence of association between the levels of IgG titres and the SP/AP ratio.

Peripheral vestibular disorders with acute onset of vertigo.


In acute vestibulopathy, suspicions of the activation of herpes virus infections as a causative agent are increasing, but no reports on the treatment of such infections are yet available.

Viral Theory for Ménière’s Disease and Endolymphatic Hydrops: Overview and New Therapeutic Options for Viral Labyrinthitis

Annals of the New York Academy of Sciences - Volume 830 Issue Immunologic Diseases of the Ear, Pages 306 - 313

In six cases of Ménière's disease, the sac wall was definitely fibrotic and ischemic and the epithelium either absent or markedly altered. There was partial or complete obliteration of the lumen in every case. In cases where the duct was not seen by polytomography, the epithelium was usually absent in the sac. Since none of these patients had a history of suppurative otitis media or mastoiditis, the most likely etiology for the changes observed is an old viral labyrinthitis affecting especially or perhaps primarily the duct and sac, destroying or markedly impairing the normal resorption of endolymph.

Herpes virus and Ménière's disease.


Based on these results, reactivation of HSV1 and VZV in the vestibular ganglion does not seem to play a role in the pathogenesis of MD.

Intratympanic application of an antiviral agent for the treatment of Ménière’s disease.


In conclusion, most patients were improved after the intratympanic injections, but there was no obvious difference between the treated and control groups. The benefit might be due to the middle ear ventilation or reflect an improvement in the patients' emotional state.

Viral infection and serum antibodies to heat shock protein 70 in the acute phase of Ménière's disease.


We found no relationship between the presence of antibodies to HSP70 and immunological or viral testing.
Detection of viral DNA in vestibular ganglia tissue from patients with Menière's disease.
CONCLUSIONS: In patients with MD requiring surgical intervention, infection with herpes simplex virus, cytomegalovirus, or varicella zoster virus of the vestibular ganglia does not appear to play a major role in the pathoetiolog of the disease.

Does virus diagnosis open new ways for the classification and treatment of sudden deafness, unilateral vestibular loss and idiopathic facial paralysis?
HNO. 1986 Sep;34(9):376-8.
So viral etiology of sudden deafness, acute vestibular loss and Bell's palsy seems to be unlikely and does not change the assignment and therapy of this disease.

Possible viral etiology of inner ear diseases
Laryngol Rhinol Otol (Stuttg). 1981 Nov;60(11):591-2
Therefore we refute a relation between viral infection and inner ear troubles; for a practical point of view virological diagnostics is not indicated.