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## CLINICAL VIGNETTE

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# A Rare Patient with Geniculate Ganglion Hemangioma Misdiagnosed as Bell's Palsy

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### Case Presentation

A 37-year-old previously healthy male presented with sudden onset facial nerve palsy with asymmetric smile weaker on the left, drooping of the left corner of his mouth, and left sided ptosis. He denied any recent respiratory or flu-like illness, or history of HSV. He also had no family history of any neuropathy, or any risk factors such as diabetes, hypertension, hematological disease, or obesity. Exam showed no cutaneous findings on the face or external ear canal, and the patient did not report headache, vertigo, imbalance or hearing loss. He was diagnosed with Bell's palsy and given steroids which failed to alleviate his symptoms.

CT of the internal auditory canal did not reveal mass or any irregularities of the facial nerve canal or destruction of adjacent bone. MRI with and without contrast with FSE T1 and T2WI failed to detect any lesions. Laboratory testing was also normal, including CBC, CMP, ESR, CRP, HIV Ag/Ab test, Lyme serologies, and HSV 1/2 IgG and IgM. The patient was diagnosed with idiopathic Bell's Palsy. However, his symptoms failed to improve over months raising concerns about his diagnosis. He searched the internet for alternate diagnoses. He found a case report of a patient with progressive facial nerve palsy who was eventually diagnosed with a geniculate ganglion hemangioma after 3D MRI. This fast imaging use steady state acquisition (FIESTA) to better delineate very small structures. The patient brought the article to his physician and convinced him to order the 3D MRI. MRI with 3D FIESTA showed a sub centimeter enhancing lesion in the left geniculate ganglion, and he underwent surgical resection of mass. Pathology was consistent with a benign geniculate ganglion hemangioma. Although surgery spared the facial nerve, his left facial weakness only partially improved. He still has residual left facial muscle atrophy.

### Discussion

Facial nerve tumors are rare, but when they occur, most cases are found near the geniculate ganglion. These tumors are more common in women, typically in their 30s-60s.<sup>1</sup> Geniculate ganglion hemangiomas (GGH) account for less than one percent of all intra-temporal tumors, but the true incidence is debated given the high rate of misdiagnosis and few case reports and reviews after its first description in 1969.<sup>2</sup>

The differential diagnosis includes schwannomas, meningiomas, cholesteatomas, and other bone-based tumors at the

geniculate ganglion fossa. Even with CT and MRI, accurate diagnosis with imaging is still challenging. This may be in part because as seen in our patient, symptoms can occur early in the course of the disease when the tumor size could be as small as 2 mm. According to one case series, thin section MRI using 3D FIESTA was able to diagnose 100% of cases. This outperformed 2D fast spin echo (FSE) T2WI which diagnosed 82% of cases. MRI with 2D FSE T2WI in turn outperformed high-resolution CT. MRI with 3D – FIESTA is a newer technique which offers higher spatial resolution of minute structures such as cranial nerves, especially within cisternal spaces. It also provides increased contrast between CSF, vessels and cranial nerves, and has been reported as a sensitive tool in the evaluation of retro-cochlear pathologies.<sup>3</sup> Generally, all lesions exhibit contrast enhancement given the increased vascularity.<sup>1</sup> A standard CT or MRI of the temporal region may have variable sensitivity in diagnosis.<sup>4</sup> A combination of high-resolution CT and MRI with 3D FIESTA may increase the sensitivity for diagnosis and better characterize the course, extent, and type of tumor (GGH, Schwannoma, etc.). This is of special significance given the differences in surgical treatment and approach depending on tumor type.<sup>5</sup>

Symptoms can present early in the disease course, with either sudden or progressive onset of peripheral facial nerve palsy or hemifacial spasm. GGH can spread to the internal auditory canal, tympanic segment, and labyrinth. It can also involve the auditory nerve and cochlea as well as the ossicular chain, resulting in sensorineural and conductive hearing loss, tinnitus, vertigo, and pain.<sup>2</sup> Even though GGH's are benign and slow growing slow flow vascular lesions, the facial nerve is particularly susceptible to damage due to its narrow path of exit through the stylomastoid foramen.

The only treatment for GGH is surgical resection. Some studies recommend resection be completed as soon as the tumor is symptomatic.<sup>2</sup> Some case reviews advocate for careful monitoring in some patients given the tumor's slow growth, and difficulty in isolating the tumor from the facial nerve without damage or resection.<sup>6,7</sup> Lesions in or around the geniculate ganglion or internal auditory canal can produce severe symptoms out of proportion to their size and represent a range of potentially treatable and/or malignant pathologies. It is reasonable to consider a combination of High-Resolution CT and/or MRI with 3-D FIESTA (in combination with appropriate

laboratory testing) in patients presenting with facial nerve palsy before finalizing diagnosis of idiopathic bell's palsy.

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