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Case Report
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Clinical Significance of Imaging Modalities in Ramsay Hunt Syndrome Diagnosis

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Abstract

Ramsay Hunt Syndrome (RHS) has been extensively studied within the past decade in regards to its presentation and management. In order to ensure timely management and effective treatment, clinicians must have a strong grasp on the clinical manifestation of RHS and its atypical variants.

In this article, we review a case of a 71-year-old patient who presented with a complaint of acute onset right-sided facial paralysis and ipsilateral otalgia, consistent with a variant of Ramsay Hunt known as zoster sine herpete. Due to the clinical resemblance between this variant and Bells' Palsy, a diagnosis based solely on clinical examination was insufficient. Through this case, we highlight the significance of imaging modalities in the diagnosis of atypical forms of Ramsay Hunt Syndrome.

Introduction

Ramsay Hunt Syndrome is a major otologic complication of Varicella zoster virus (VZV) reactivation. Diagnosis of Ramsay Hunt is based on a clinical evaluation, and is traditionally characterized by a triad of ipsilateral facial paralysis, ear pain and vesicles [1]. However, a significant fraction of Ramsay Hunt cases presents without the vesicular rash, and is termed as zoster sine herpete [2]. Although appearing clinically similar to Bell's Palsy, this presentation of Ramsay Hunt Syndrome can lead to more severe complications, including a variety of neurological symptoms [3]. A range of neurological damage patterns, including hearing and balance issues, sensory issues, taste disturbances, and abnormalities in lacrimal and nasal secretion, have also been reported [4,5]. While clinical symptoms have been the driving factor in reaching a clinical diagnosis, findings on various imaging modalities have shown to have diagnostic value. Current literature explores the use of temporal bone magnetic resonance imaging in characterizing the severity of RHS [6,7] and diagnostic value [8]. Temporal bone mastoid effusion has been reported in patients diagnosed with Ramsay Hunt and has been used to differentiate between the diagnosis of Bell's Palsy [8]. In this paper, we report a case of a patient being diagnosed with and successfully treated for Ramsay Hunt after receiving a diagnosis on Computed Tomography Scan (CT).

Case Presentation

A 71-year-old female presents to the emergency department with past medical history of right-sided acoustic neuroma status post excision in 2020. She reports right ear pain that started eight days ago. The pain got progressively worse and began to radiate towards her right jaw and mastoid region. There was no history of headache, tinnitus, or hearing impairment. Computer Tomography (CT) of the right mastoid air cells showed a small amount of retained fluid. The left mastoid air cells were unremarkable with normal tympanic membrane (Figure 1A). No evidence of cholesteatoma was visualized. The patient was given Intravenous antibiotics in the emergency department. The following day, the patient had facial findings suggestive for bell's palsy (right sided facial paralysis, right eye inability to close involuntarily). Oral Prednisone (PO) was initiated for seven days total. Magnetic Resonance Imaging (MRI) of the brain was performed before and after intravenous gadolinium administration with special attention to the internal auditory canals. This further showed postoperative changes from a right rectosigmoid cranioplasty with postoperative changes in the right internal auditory canal and at the right cerebellopontine angle cistern (Figure 1B). There is a region of 6 mm × 6 mm enhancement within the right internal auditory canal which may represent residual tumor and/or postoperative change.

Presence of asymmetrical increased enhancement involving the genu and tympanic segment of the right facial nerve suggestive of neuritis. Patient was also started on antivirals to treat Ramsay-Hunt Syndrome. She was transitioned to PO antibiotics on discharge and was deemed

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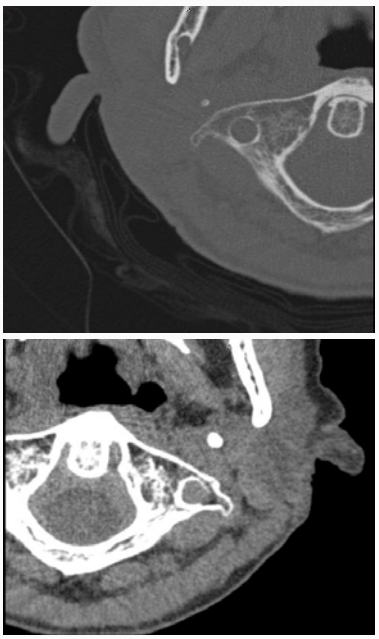

Figure 1A: CT mastoids without contrast.

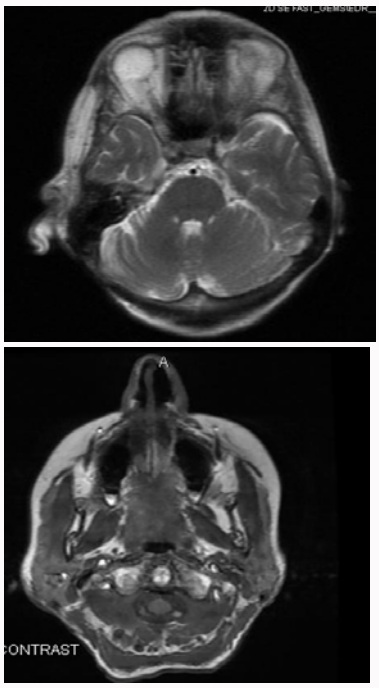

Figure 1B: MRI brain internal auditory canal with and without contrast.

hemodynamically stable to go home.

Discussion

Ramsay Hunt Syndrome (RHS) is a neurological and otological disorder caused by the reactivation of the Varicella-zoster virus (VZV) in the geniculate ganglion of the facial nerve. It is characterized by a triad of ipsilateral facial paralysis, ear pain, and vesicles in the auditory canal or on the auricle, which is also known as zoster oticus [1,9]. While RHS has been extensively studied to cause external ear changes, recent reports have shown that RHS can lead to changes within the internal cavities, particularly within the mastoid cavity [8]. Diagnosis of RHS primarily relies on medical history and physical examination, and radiological findings provide additional support in confirming the diagnosis. In this case report, we present the details of a 71-year-old female patient who did not exhibit the complete classic triad of RHS, but the diagnosis was made based on imaging findings. Despite the absence of vesicles in the auditory canal or auricle, the presence of otalgia and sudden onset of facial nerve paralysis strongly suggested RHS as the underlying condition. Subsequent imaging studies further supported the diagnosis by revealing changes within the mastoid cavity.

Radiological findings exhibit higher sensitivity in diagnosing RHS and differentiating it from other facial nerve palsies, including Bell's Palsy. Specifically, imaging studies have revealed distinct changes in the mastoid cavity, manifesting as either sclerotic alterations or the accumulation of fluid, which are exclusive to RHS [8]. In our patient, a CT scan of the mastoids revealed the presence of retained fluid in the right mastoid air cells. This finding is suggestive of a mastoid effusion, which has been described as a distinguishing feature for RHS [8]. Mastoid effusion is present in patients who have both typical and atypical presentation of RHS. Consistent with another patient diagnosed with zoster sine herpete, our patient exhibited a mastoid effusion on the same side as the facial nerve paralysis [8]. This finding further strengthens the association between the presence of mastoid effusion and the manifestation of facial nerve involvement in RHS. For further investigation, a Magnetic Resonance Imaging (MRI) scan was performed, specifically examining the internal auditory canals. The results revealed asymmetrical increased enhancement within the genu and tympanic segment of the right facial nerve, suggesting the presence of neuritis. While this finding confirmed the existence of facial nerve paralysis, it did not significantly aid in narrowing down the differential diagnosis between Bell's Palsy and RHS. Although a temporal bone MRI would have provided a more comprehensive evaluation of the changes within the middle ear and helped confirm the diagnosis, the computed tomography findings were sufficient to establish the diagnosis of RHS.

Conclusion

Radiological findings serve as a valuable resource in the diagnostic process for RHS, especially in atypical presentations where the classic triad is not fully present. Clinicians should consider using a variety of imaging modalities to reach an accurate diagnosis and to provide appropriate management for patients with RHS. Further research is warranted to establish strict imaging diagnostic criteria and optimize patient outcomes.

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