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Case Report

Ramsay Hunt Syndrome with Multiple Cranial Nerves Involvement: A Case Report and Literature Review from Africa

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Abstract

Background: Ramsay Hunt Syndrome (RHS) is a rare viral infection involving reactivation of varicella zoster virus (VZV) infection in the geniculate ganglion of the facial nerve. The classical clinical presentation includes otalgia, herpetic vesicles on the ear, auditory canal and sometimes in the mouth together with ipsilateral facial nerve paralysis. Other adjacent nerve involvement is very rare. We report an unusual presentation of RHS in an immunocompetent male with multiple cranial nerve involvement.

Case Presentation: A 71-year-old African man presented with a one-week history of right-sided headache, otalgia, otorrhoea and right sided facial weakness. He later complained of hoarseness, dysphagia and coughing. Examination revealed a large black necrotic eschar involving almost the whole of the right ear lobe extending from the ear canal and concha to the pinna, together with herpetic like vesicles on the ipsilateral soft palate with ipsilateral facial and palatal palsy, and deafness indicating involvement of adjacent cranial nerves VII, VIII, IX and X. He was treated initially with broad-spectrum antibiotics and later started on acyclovir and prednisolone with some improvement in symptoms after one week of treatment.

Conclusions: This is a case report from Africa of RHS with ipsilateral hearing loss and bulbar symptoms secondary to multiple adjacent cranial nerve involvement. The report emphasizes the awareness of this syndrome in Africa where resources for PCR viral testing and complex neuroimaging are limited, and its uncommon association with other cranial nerve palsies. Early recognition is paramount as treatment is more effective if it is given early in the course of illness.

Keywords: *Herpes Zoster Oticus; Ramsay Hunt Syndrome; Pharyngitis; VZV; Facial Paralysis; Zoster Polyneuritis*

Abbreviations

RHS: Ramsey Hunt Syndrome; VZV: Varicella Zoster Virus; KCMC: Kilimanjaro Christian Medical Centre; HIV: Human Immunodeficiency Virus; PCR: Polymerase Chain Reaction; CN: Cranial Nerve; FNP: Facial Nerve Palsy.

Introduction

Ramsay Hunt Syndrome (RHS) arises from a reactivation of varicella zoster virus (VZV) infection involving the geniculate ganglion of the seventh cranial nerve. The syndrome is characterized by herpetic vesicular lesions arising on the outer ear and in the external auditory canal (zoster oticus) and sometimes on the oral mucosa occurring together with ipsilateral peripheral facial nerve palsy. The

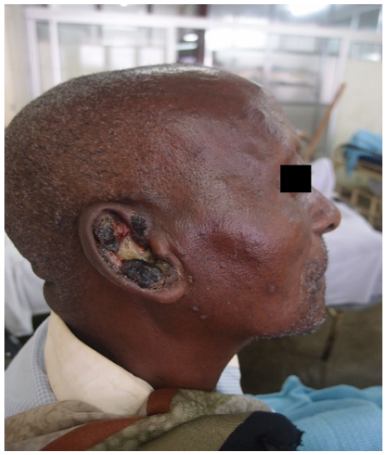
syndrome was initially described by James Ramsay Hunt [1] in 1902 who also noted at the time that the eighth cranial nerve or hearing is sometimes affected. Cranial nerve involvement in addition to the eighth cranial nerve may occur in RHS but is uncommon [2]. When this happens RHS may involve cranial nerves V-XII and the upper cervical nerve roots on the affected side but most frequently involving the adjacent cranial nerves VIII, IX and X. This unusual variation in presentation can pose diagnostic challenges to clinicians, which may lead to over-use of resources in constrained areas and a delay in appropriate management. In this case report we describe a case of VZV infection in an immunocompetent elderly male involving the seventh cranial nerve together with unilateral multiple lower cranial nerve involvement.

Case

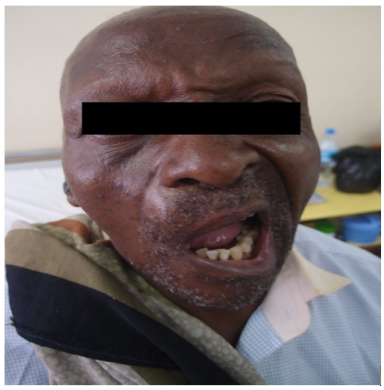
A 71-year-old man was admitted to Kilimanjaro Christian Medical Centre (KCMC) hospital in Northern Tanzania with a one-week history of fever, severe headache, ear pain, right ear discharge, failure to close the right eye and weakness of the right side of his face. This was followed by reduced hearing on the ipsilateral side. Two days before admission, he developed dysphagia, coughing and hoarseness. The patient denied any other symptoms and had no other medical or neurological disorders.

On general examination, he was a well nourished adult male with the following vital signs: pulse rate 103/minute, respiratory rate 20/minute, blood pressure 130/80 mmHg and temperature 36.5 ^{0}C. Examination of his right ear showed a dark black necrotic eschar with serosanguinous discharge involving 80-90% of the pinna and external auditory canal (Figure 1A). Examination of the mouth revealed multiple healing erythematous vesicular lesions involving the soft palate on the right side (Figure 2; supplementary video submitted to editors) and the affected palate was noted to be floppy (Figure 3, supplementary video submitted to editors).

Neurological examination revealed him to be alert with intact higher centers. Cranial nerves examination revealed complete loss of forehead wrinkling, right lid ptosis, loss of nasolabial fold and marked loss of power on the right side of his face consistent with severe lower motor neuron facial nerve palsy (FNP) (Figure 1 B-D), House Brackmann classification V [3]. Initially, the admitting team thought of Bell's palsy (due to obvious CN VII involvement). This was later revised after consultation with the neurologist. A full cranial nerve examination was done. On testing the voluntary and involuntary gag reflex on the left, the palate was observed to significantly deviate



(A)



(B)

(C)

(D)

Figure 1: *Necrotic concha and external auditory canal (A) seen with a dense right lower motor neuron facial nerve palsy with loss of nasolabial fold (B), impaired eye closure (C), and forehead wrinkling (D).*

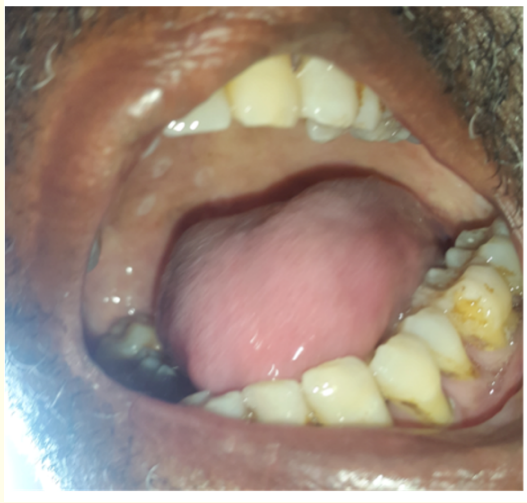


Figure 2: *Herpetic vesicles noted on the right palate appearing as several white vesicles.*

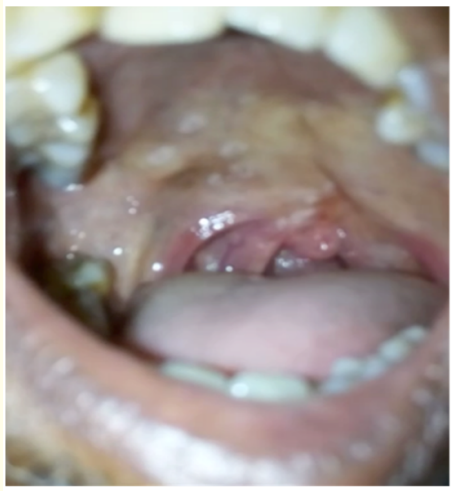


Figure 3: *Affected palate and uvula.*

to the left or non-affected side. This was associated with loss of sensation and involuntary gag reflex on the right, revealing unilateral IX and X palsy, and thereby explaining the 'gargling' sounds and mouth secretions. Hearing was also significantly reduced on the right ear.

Examination of the rest of the cranial nerves and nervous system was normal. Respiratory, cardiovascular, abdominal, and genitourinary examinations revealed normal findings clinically. Laboratory investigations were within normal ranges and screening for HIV was negative. However, his chest X-ray shows features suggestive of pneumonia.

A clinical diagnosis of Ramsey Hunt Syndrome was made with involvement of multiple lower cranial nerves (VII, VIII, IX, X) on the affected side. In addition, he had evidence of pneumonia and secondary suppurative otitis externa. Management included aural toilet and broad-spectrum antibiotics; Ceftriaxone 2g once per day, Cloxacillin 1g 6hrly and metronidazole 500mg 8hrly, Acyclovir 800mg per oral 5 times a day and prednisolone 60mg po daily for 10 days were added later. During the first week of treatment a mild improvement was noted in the patient's symptoms. However, his cranial nerve palsies remained largely unchanged apart from a slight increase in right facial musculature power. He was discharged from hospital with oral ampicillin/cloxacillin, ciprofloxacin and acyclovir and instructions to continue facial physiotherapy exercises at home and to attend for follow up at the medical outpatient clinic.

On review of his file, there were no records of a scheduled three-month follow up visit; however, evidence of a more recent review by ENT was found where he complained of ear and throat pain for 5 days. ENT examination was documented to be normal, albeit with no specific details. His symptoms were attributed to possible gastro-oesophageal reflux disease (GERD) and a proton pump inhibitor was prescribed.

Discussion

Epidemiology

The prevalence of RHS varies worldwide. In North America, the incidence of RHS is estimated to be 5 per 100 000 [4] and represents just 0.2% of all lifetime HZ cases [5]. Reports of RHS in Africa are few [6-9] and those typically describing FNP occurring in association with HZ, some in association with HIV [10]. A study in a specialist hospital in Nigeria on the causes of FNP found 39.1% to be attributed to Bell's palsy, 30% secondary to stroke, otitis media in 12.8% and herpes zoster in just 1.3% [7]. In that particular study there was no specific mention of RHS. It is also known that there exists a small subgroup of FNPs without the typical vesicles on the ear canal or mouth, which could be attributed to RHS. This condition is known as RHS herpes zoster sine herpete [11]. It has been reported to occur in 2 - 23% of cases of FNPs with an average frequency of eight percent reported in one study [12]. To ascertain the role of VZV requires polymerase chain reaction (PCR) to detect the presence of VZV [13]. Overall using a classic triad of "facial paralysis, ear pain and herpetic eruptions in any cranial dermatome", RHS was found to be the cause in 12% of those presenting with unilateral facial paralysis [14]. Similarly, a large retrospective review of 2076 adult cases that presented with unilateral peripheral facial palsy in Japan found that a total of 18.1% presented with the clinical features of RHS. [15]. Estimates say approximately 12% of all FNPs are caused by VZV, however, this decreases to 1.8 - 3.2% when screening for RHS occurring in association with other cranial nerve palsies [16].

Of clinical significance, this case had a diagnosis of pneumonia, as evidenced by the finding on chest X-ray (Figure 4) of typical infiltrates in the right lower zone. Although it is plausible to consider that the pneumonia resulted in low immunity in this elderly man and hence reactivation of VZV, there is strong evidence to suggest that the pneumonia occurred as a result of aspiration as a complication. In order to assess this, his clinical presentation was carefully reviewed. Chronologically, the illness did not start with fever, cough or difficulty in breathing. Furthermore, ENT review noted the patient was "choking" after the diagnosis of RHS was established. The chest x-ray attached (Figure 4) shows infiltrates on the right lower zone. It is known from the anatomy of the bronchial tree that aspiration is more common on the right, thus making this plausible. Furthermore, there was no leukocytosis or neutrophilia present on laboratory results on admission. Given the above presentation, we believe it is likely the patient developed aspiration pneumonia as a complication of cranial nerve IX and X palsy, an important possible complication for attending clinicians to be aware of.

Pathophysiology

VZV is part of alpha herpes family of viruses. Infection in humans is usually acquired but not limited to childhood as chickenpox. After infection, the virus remains as a latent infection in sensory ganglia, where it may re-activate at a later period [17]. VZV reactivation in the geniculate ganglion sensory fibers cell bodies is considered to result in inflammation and swelling of the facial nerve within the facial canal in the temporal bone which leads to its compression and paralysis [18]. The mechanism of the eighth nerve involvement is

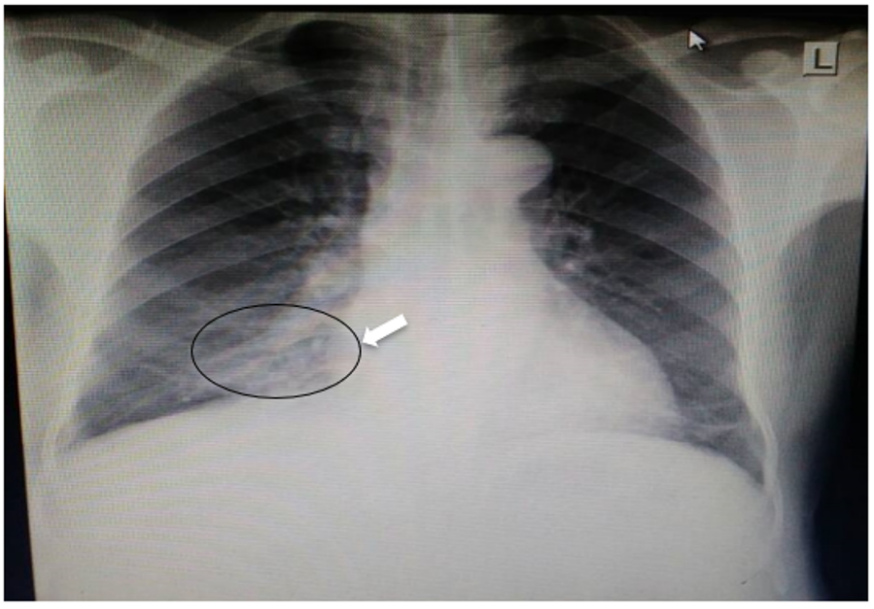


Figure 4: *Chest X-ray taken during hospital admission showing infiltrates in the right lower zone (circled) likely secondary to a pneumonic process.*

explained by the close vicinity of the geniculate ganglion to the eighth cranial nerve. This adjacent hypothesis theory also explains the contiguous involvement of other nearby ganglia, namely gasserian, petrous, accessory, jugular, plexiform, as well as the second and third cervical dorsal root ganglia [5,11]. Other possible explanations draw on the susceptibility of blood vessels to VZV vasculitis coupled with the anatomy of blood supply to the cranial nerves notably the ascending pharyngeal artery supplying CN IX, X, XI, and XII [11]. This may explain why rarely, as in this case, herpetic pharyngitis may co-exist with CN IX and CN X neuropathies as these originate from one brachial arch [11,19].

Diagnosis

The diagnosis of RHS is clinical, based on the finding of unilateral FNP in combination with typical ipsilateral vesicular lesions involving the ear, palate and/or anterior two thirds of tongue. Atypical presentations include the classic RHS occurring in association with multiple ipsilateral cranial nerve involvement most frequently V, VIII, IX, X and less commonly XI and XII. During its acute presentation the differential diagnosis for RHS includes other causes of pain and facial nerve palsy including acute otitis externa and trigeminal neuralgia. The differential diagnosis widens depending on which other cranial nerves are involved. However the finding of the typical clinical pattern of RHS makes the diagnosis reasonably certain and any further neurological investigations unnecessary. The diagnosis can be confirmed by carrying out polymerase chain reaction (PCR) on appropriate samples from the lesions but the test is usually not accessible to the average patient in Africa. Screening for the presence of possible underlying HIV infection is necessary especially in at risk populations.

Management

The mainstay of treatment is administration of antivirals for 10 days plus corticosteroid therapy for 7 days. The overall outcome of FNP in RHS is worse when compared to other idiopathic forms [20]. However, in RHS, antivirals have been shown to reduce the duration

of symptoms and the underlying nerve damage [5]. Common antivirals used are acyclovir, valacyclovir (1 gm tds) or famciclovir (500 mgs three times per day). If parenteral acyclovir is available, then 250 mgs three times a day is sufficient. Alternatively, oral acyclovir is given at 800 mg for 5 times per day, as absorption in the gut does not exceed 15 - 20% [21]. There was no clinical difference in outcome between oral and intravenous forms of acyclovir [22]. The addition of steroids to antivirals within the first 72 hours of onset of RHS leads to a better outcome [23]. Rates of complete recovery in patients with facial palsy in RHS vary from 10 to 51.4% even when optimally treated [4,14,24,25]. However in a retrospective study, it was noted that a full recovery was observed in 75% when combined steroid/antiviral treatment was started within 3 to 7 days of onset as compared to 30% recovery when started after 7 days [21].

Conclusion

To our knowledge this is the first report of RHS occurring with multiple cranial nerve palsies in Africa. RHS is a relatively rare neurological disorder but because of its characteristic classic triad of clinical features it can be recognized, diagnosed and treated. Although it has been reported globally there are only a few isolated reports of RHS from Africa [6,8,9] and some of those in relation to HIV [10]. This case report describes a more severe form of classical RHS presenting with loss of hearing on the affected side and difficulties in swallowing, hoarseness with evidence of aspiration. Notably the full extent of the neurological involvement (IX and X paresis), was only realized when a more detailed examination was carried out some days after admission as the patient became more symptomatic. On admission the extensive necrosis involving his ear and ear canal was erroneously attributed to bacterial infection (see photo). Likely, pneumonia was related to aspiration, a complication of lower cranial nerve IX and X palsies. Late clinical presentation and diagnosis is not unusual in Africa and carries obvious implications for management. Although antibiotics were started promptly on admission, there was a delay of a couple of days in the initiation of antivirals and prednisolone and hence expectations of a complete recovery were low. Nevertheless, apart from experiencing minor pain symptoms, the ENT examination one year later suggested a positive outcome. Overall, this case therefore highlights the need for awareness of varied clinical presentations of RHS, which can be confusing and lead to delays in diagnosis and management. Awareness of the anatomical patterns of spread can help in establishing the diagnosis.

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Conflicting Interests

The authors declare that they have no competing interests. No funding was used in this case report.

Bibliography

1. Hunt JR. "On herpetic inflammations of the geniculate ganglion, a new syndrome and its complication". *The Journal of Nervous and Mental Disease* 34 (1907): 73-96.

2. Turner JE., *et al*. "Cranial polyneuropathy— Ramsay Hunt's syndrome. Case report and discussion". *Oral Surgery, Oral Medicine, Oral Pathology, and Oral Radiology* 83 (1997): 354.

3. House JW and Brackmann DE. "Facial nerve grading system". *Otolaryngology–Head and Neck Surgery* 93.2 (1985): 146-147.

4. Monsanto RD., *et al*. "Treatment and prognosis of facial palsy on Ramsay Hunt Syndrome: Results based on a review of literature". *Archives of Otorhinolaryngology* 20 (2016): 394.

5. Worme M., *et al*. "An unexpected case of Ramsay Hunt syndrome: case report and literature review". *BMC Research Notes* 6 (2013): 337.

6. Opoku-Buabeng J and Dompreh A. "Ear, nose and throat lesions in hiv/aids patients in komfo anokye teaching hospital, kumasi, ghana". *Journal of the West African College of Surgeons* 2.2 (2012): 27-39.

7. Lamina S and Hanif S. "Pattern of facial palsy in a typical Nigerian specialist hospital". *African Health Science* 12.4 (2012): 514-517.

8. T/Selasic and Zenebe G. "Ramsay Hunt syndrome". *Ethiopia Medical Journal* 44.4 (2006): 2014.

9. Bademosi O., *et al*. "Clinical study of unilateral peripheral facial nerve paralysis in Nigerians". *African Journal of Medicine and Medical Sciences* 16.4 (1987): 197-201.

10. Bélec L., *et al*. "Peripheral facial paralysis and HIV infection: report of four African cases and review of the literature". *Journal of Neurology* 236 (1989): 411-414.

11. Sweeney CJ and Gilden DH. "Ramsay Hunt syndrome". *Journal of Neurology, Neurosurgery and Psychiatry* 71 (2001): 149-154.

12. Adour KK. "Otological complications of herpes zoster". *Annuals of Neurology* 35 (1994): S62-64.

13. Mauprivez C., *et al*. "Acute facial nerve palsy with Ipsilateral Soft Palate Ulcers". *Journal of Oral and Maxillofacial Surgery* (2017).

14. Robillard ZRB., *et al*. "Ramsay Hunt facial paralysis: Clinical analysis of 185 patients". *Otolaryngology–Head and Neck Surgery* 95 (1986): 292.

15. Hato N., *et al*. "Ramsey Hunt syndrome in children". *Annuals of Neurology* 48.2 (2000): 254-256.

16. Rasmussen ER., *et al*. "Ramsay Hunt syndrome revisited–emphasis on Ramsay Hunt syndrome with multiple cranial nerve involvement". *Virology Discovery* 2 (2014): 1

17. Kennedy PGE., *et al*. "A comparison of herpes simplex virus type 1 and varicella-zoster virus latency and reactivation". *The Journal of General Virology* 96 (2015): 1581-1602.

18. Eksi G., *et al*. "The effect of width of facial canal in patients with idiopathic peripheral facial paralysis on the development of paralysis". *European Archives of Otorhinolaryngology* 272 (2015): 2283.

19. Shinha T and Krishna P. "Ramsay Hunt syndrome and zoster laryngitis with multiple cranial nerve involvement". *ID cases* 2 (2015): 47-48.

20. Devriese PP and Moesker WH. "The natural history of facial paralysis in herpes zoster". *Clinical Otolaryngology* 13 (1988): 289.

21. Murakami S., *et al*. "Treatment of Ramsay Hunt syndrome with acyclovir-prednisone: significance of early diagnosis and treatment". *Annuals of Neurology* 41 (1997): 353-357.

22. Ljungman P., *et al*. "A randomized trial of oral versus intravenous acyclovir for treatment of herpes zoster in bone marrow transplant recipients". *Bone Marrow Transplant* 4.6 (1989): 613-615.

23. Coulson S., *et al*. "Prognostic factors in herpes zoster oticus (Ramsay hunt syndrome)". *Otology and Neurotology* 32 (2011): 1025-1030.

24. Zainine R., *et al*. "Ramsey Hunt syndrome". *European Annals of Otorhinolaryngology, Head and Neck diseases* 129 (2012): e22-e25

25. Ryu EW., *et al*. "Clinical manifestations and prognosis of patients with Ramsay Hunt syndrome". *American Journal of Otolaryngology* 33.3 (2012): 313-318.

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