

A UNIQUE CASE OF HERPES ZOSTER

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ABSTRACT

A 77 year old male presented to the Carman Community Health Centre in June of 2019 complaining of a severely sore throat, along with pain along the right side of his tongue and cheek. Physical examination showed white pustules along the right side of the patient's tongue, buccal mucosa, and soft palate. A clinical diagnosis of Herpes Zoster affecting the Mandibular Nerve was made, and the patient was treated successfully with Valacyclovir. A literature review revealed that Herpes Zoster affecting the Mandibular nerve is very rare. This case is important because even though the infection presented in a classic dermatomal fashion, it may still cause certain diagnostic difficulties for physicians who are unaware of rare presentations such as this.

CASE REPORT/HISTORY

A 77-year-old male presents to the clinic with a 6-day history of a worsening sore throat. The patient is worried that he may have "strep throat" because he is having difficulty swallowing and his pain is severe. The patient also states that he "must have bit the right side of his tongue and cheek in his sleep" because the entire right side of his mouth is in pain, however he cannot remember doing so. The patient also complains of a mild cough, a subjective fever, and slight chills. He has no painful or swollen lymph nodes, no rhinorrhea, no headache, and no muscle aches. The patient cannot recall ever having streptococcal pharyngitis before and does not have any sick contacts. He has a medical history of type 2 diabetes, which is controlled by taking insulin. He also takes medication for high blood pressure and high cholesterol. Upon physical examination, it is noted that the right side of his tongue, right buccal mucosa, and right soft palate are covered in white pustules. The right-sided pustules stop just past the midline of the mouth, and the left side of the patient's mouth appears normal. The patient also points to his outer right cheek as being quite painful. Due to the characteristic unilateral dermatomal pattern of the pustules, a clinical diagnosis of Herpes Zoster (HZ), also known as "Shingles", was made. The patient was prescribed antiviral Valtrex/Valacyclovir (1g 3 times daily for 7 days) and booked for a follow up 5 days later.

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Figure 1. White pustules are seen along the right side of the patient's tongue, as well as on the right buccal mucosa.



Figure 2. White pustules can be seen along the right side of the soft palate, as well as along the right buccal mucosa.

Upon follow-up 5 days later, the patient was feeling better. He was able to swallow much easier, with only a small tickle to the back of his throat remaining. The pustules were significantly improved, and still localized to the right side of the mouth. He continues to have

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an occasional subjective fever but is overall feeling well. Upon physical examination, the few pustules that remained appeared to be healing adequately. At this time, we decided to use a nucleic acid amplification test to potentially confirm a Herpes Zoster diagnosis. We also took more of focused history and physical exam in attempt to gather more relevant information and see if the patient had any relevant risk factors for developing HZ. The patient did confirm a chicken pox diagnosis as a child. It is well known that a primary infection of the Varicella Zoster Virus (VZV) results in Varicella, more commonly known as “Chicken Pox”. It is the same VZV that can lie dormant in sensory ganglia for many years before reactivating into HZ.¹ Therefore, a childhood diagnosis of Varicella makes an HZ diagnosis later in life more likely. The patient also had no history of immunocompromise or autoimmune disease. Reactivation of the Varicella Zoster Virus is more likely in patients with immunocompromise.² The patient had had no recent trauma to the head. An age matched case control study showed that patients who had had head trauma were 3.4 times more likely to develop cranial HZ within the week.³ The patient also had no recent cancer, no lung disease, and a small amount of kidney damage from his type 2 diabetes. Certain comorbidities may increase the risk of VZV reactivation such as malignancy, lung disease, liver disease, and renal failure.⁴ He did not have any other Zoster lesions anywhere else on his body. Because of the dermatomal location of the lesions, we determined that the Zoster was likely affecting the Mandibular nerve (the third branch of the Trigeminal nerve). The Mandibular nerve provides sensory information from the mandibular area of the face, including but not limited to the tongue, the floor of the mouth, the mucosa and skin of the cheek, the lower lip, and the chin.⁵ Through a soft touch test, we determined that the patient had full sensation in the mandibular region of his face. Since the Trigeminal nerve also gives rise to the Ophthalmic and Maxillary nerves, sensation of these distributions were also tested. The patient had full sensation of the face. The patient also had full range of motion of his face, as well as no issues tasting food. At this point, we decided that the patient was healing adequately, and told him to return if any new issues presented. The results of the nucleic acid amplification test were negative for HZ, however this may have been because the test was done five days after the anti-viral therapy was started.

LITERATURE SEARCH

A literature review was conducted in order determine how to clinically diagnose Herpes Zoster, as well as if any similar cases of Herpes Zoster in the mouth had been reported. The

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search was done using Pubmed. Using the terms "Herpes Zoster/diagnosis"[Mesh], some useful articles were found. ("Herpes Zoster"[Mesh]) AND "Mouth"[Mesh] was also useful, as well as ("Herpes Zoster"[Mesh]) AND "Mandibular Nerve"[Mesh]. A few similar cases were found, including a case of *Mandibular Herpes Zoster*⁶ as well as *Lingual Zoster*⁷, but no case was found that imitated the exact location of the rash in this case.

DISCUSSION

Herpes Zoster is a neurocutaneous disease that is caused by the reactivation of the Varicella Zoster Virus, the same virus that causes a prior Varicella or “Chicken Pox” infection. It is a reactivation of a latent VZV infection along a dorsal sensory or cranial nerve. The virus typically presents itself as a painful rash that follows along a single dermatome. The hallmark of the VZV infection is a red, painful, unilateral, dermatomal, maculopapular rash.² HZ will often begin with a prodromal phase in which the patient feels a “burning” or “stabbing” sensation with no discernable cause. This phase typically lasts between 2-3 days before the rash appears. The rash begins as simply erythematous, before developing into papules, which develop into vesicles over 1-2 days. These lesions typically condense along a single dermatome. After about a week of the development of the rash, the vesicles will pustulate and begin to crust and scab over. For most patients, the main features of an HZ infection are the rash and the neuritis, but less than 20% of patients will also present with fever, malaise, headache, and/or fatigue.⁸ HZ infections are fairly common, and their incidence increases as patients become more elderly. After 60 years of age, the incidence is approximately 8-10/1000 person-years, and after 80 years becomes 8-12/1000 person-years.⁹ Risk factors for developing HZ include advanced age², a previous infection by VZV¹, immunocompromise², recent head trauma³, and comorbidities such as malignancy, lung disease, liver disease, and renal failure.⁴ Herpes Zoster may be diagnosed clinically with high confidence when there is the presence of a unilateral, dermatomal rash accompanied by neurologic pain, especially if the patient has risk factors such as being of advanced age and reports a previous Varicella infection. If there is uncertainty, the diagnosis should be confirmed by a polymerase chain reaction.² Approved treatments for HZ infection include antivirals Valacyclovir (1000 mg 3 times daily for 7 days), Acyclovir (800 mg 5 times daily for 7–10 days), and Famciclovir (500 mg 3 times daily for 7 days)¹⁰.

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A common source of diagnostic error when it comes to diagnosing an HZ infection is failing to consider the possibility of a Herpes Simplex Virus (HSV) infection. Like HZ, HSV also presents with an erythematous vesicular rash accompanied by pain. HSV may be distinguished from HZ by it having multiple recurrences, or by it not presenting in a unilateral dermatomal pattern.² However, the rash itself looks very similar to an HZ rash. If either infection were to be disseminated, the two infections could potentially be indistinguishable. Other sources of diagnostic error may be burns, contact dermatitis, or a vesicular rash caused by a different source such as a fungus.²

Although this case of Zoster presented in the classical way (a dermatomal, unilateral rash), it may still cause certain diagnostic difficulties in physicians who are unaware of rare presentations such as this. The most common presentation of HZ is in the thoracic dermatome (45% of cases)¹¹. The most recognizable presentation of HZ is a characteristic unilateral rash in a single dermatome on the back and/or the chest. Cases affecting the cervical dermatome comprise around 23% of cases¹¹. Zoster will only affect the Trigeminal dermatome around 15% of the time.¹¹ The branch of the Trigeminal nerve that is most commonly affected is the Ophthalmic branch¹², which can result in serious complications such as blindness, glaucoma, and optic neuritis². It is however much more rare for the Mandibular branch of the Trigeminal nerve to be affected¹². The sensory portion of the Mandibular nerve relays sensory information from the mandibular area of the face, including the tongue, the floor of the mouth, the mucosa and skin of the cheek, the lower lip, and the chin.⁵ Our patient's rash was localized only to the right side of his tongue, right buccal mucosa, and right soft palate. While the tongue and the buccal mucosa are innervated by the Mandibular nerve, it was interesting to note that the soft palate which is innervated by the Maxillary nerve⁵ was also affected by the rash. The Maxillary Nerve is the second branch of the Trigeminal nerve, while the Mandibular Nerve is the third branch of the Trigeminal nerve, meaning that the two nerves lie adjacent to each other⁵. Typically, only one dermatome gets affected, but HZ may sometimes affect more than one dermatome at a time¹¹. As well, adjacent dermatomes may occasionally show some involvement due to normal variations in innervation.⁸ Because the involvement of the Mandibular nerve in HZ cases is quite rare, it could potentially be missed by a clinician who looks only for the classical thoracic location of a Herpes Zoster infection. If one was not careful, it would have been easy to assume that this patient had a case of Streptococcal Pharyngitis because he was presenting with a sore throat, a fever, and what appeared to be

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white spots on the back of the throat. This case illustrates the importance of being thorough and considering all possible diagnoses, even when a case appears to be simple.

A published case that imitated the exact pattern of infection seen in this case was not found, however some similar cases have been reported. In a case reported entitled *Lingual Zoster*, Chi-Kyou Lee and Byoung Joon Baek from the Soonchunhyang University School of Medicine report a 72 year old woman presenting with white patches only on the right side of her tongue and soft palate, along with mild palsy on the right side of her face⁷. This case is likely another example of the HZV affecting the Mandibular Nerve, with some anatomical variation or multiple dermatome involvement. Another similar case was reported by Tania Alfonso and Romeu Pires of Unidade Local de Saúde de Nordeste, entitled *Herpes Zoster Mandibularis*. A 70 year old male presented with a rash containing vesicles, pustules, and crusts along his left lower jaw, along with a plaque covering the anterior 2/3 of the left side of his tongue⁶. This case also likely illustrates the HZV affecting a portion of the Mandibular Nerve. A comparison with these cases show the uniqueness of the case presented, as well as emphasize the fact that it is normal for the innervation of a nerve to vary from person to person.

CONCLUSIONS

To conclude, this report details the case of a 77 year old man presenting with Herpes Zoster in the Trigeminal dermatome, likely affecting the Mandibular nerve. The patient presented with pustules covering the right side of his tongue, his right buccal mucosa, and his right soft palate. The patient was successfully treated with Valacyclovir. This case is important because Herpes Zoster affecting the Mandibular nerve is rare, and if a clinician does not know to look for it, it could pose diagnostic difficulty. (WOW amazing for a first draft, I'm impressed!)

REFERENCES

1. Forde JE, Meeker B. A MODEL OF VARICELLA-ZOSTER REACTIVATION Jonathan E. Forde. 2010;7(4):765-777. doi:10.3934/mbe.2010.7.765
2. Schmader K. Herpes Zoster. *Clin Geriatr Med*. 2016;32(3):539-553. doi:10.1016/j.cger.2016.02.011
3. Zhang JX, Joesoef RM, Bialek S, Wang C. Association of Physical Trauma With Risk of

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- Herpes Zoster Among Medicare Beneficiaries in the United States. 2013;207:1007-1011. doi:10.1093/infdis/jis937
4. McDonald JR, Zeringue AL, Caplan L, et al. Herpes Zoster Risk Factors in a National Cohort of Veterans with Rheumatoid Arthritis. 2009;63:106. doi:10.1086/598331
 5. Rodella LF, Buffoli B, Labanca M, Rezzani R. A review of the mandibular and maxillary nerve supplies and their clinical relevance. *Arch Oral Biol*. 2011;57(4):323-334. doi:10.1016/j.archoralbio.2011.09.007
 6. Afonso T, Pires R. Herpes Zoster Mandibularis. *N Engl J Med*. 2016;375(4):369-369. doi:10.1056/NEJMicm1513572
 7. Lee C-K, Baek BJ. Lingual Zoster. *N Engl J Med*. 2011;365(18):1726-1726. doi:10.1056/nejmicm1107466
 8. Dworkin RH, Johnson RW, Breuer J, et al. Recommendations for the Management of Herpes Zoster. 2007;44(Suppl 1):1-26.
 9. Kawai K, Gebremeskel BG, Acosta CJ. Systematic review of incidence and complications of herpes zoster: Towards a global perspective. *BMJ Open*. 2014;4(6). doi:10.1136/bmjopen-2014-004833
 10. Cohen JI. Herpes Zoster. *N Engl J Med*. 2013;369(3):255-263. doi:10.1056/NEJMcp1302674
 11. Goddard R. The reawakening of a sleeping little giant. *Emerg Med J*. 2005;22(5):384-386. doi:10.1136/emj.2003.008656
 12. Vourexakis Z, Vanoy J. Mucosal and cutaneous lesions in mandibular zoster. *BMJ Case Rep*. 2014:1-2. doi:10.1136/bcr-2014-204459