Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Medicine

Case Reports of Mucosal Ulceration Associated with COVID-19 Infection and Vaccination

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DOI: 10.36347/sjmcr.2022.v10i09.004 | **Received:** 23.07.2022 | **Accepted:** 29.08.2022 | **Published:** 02.09.2022

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Abstract **Case Report**

Mucosal ulceration has been reported as a symptom temporally related to infection with COVID-19 and vaccination for COVID-19. In this article, we provide two cases supporting this association to understand and outline the breadth of effects that COVID-19 and its vaccines have on those who experience them. Mucosal ulceration is a less prevalent but highly impactful symptom that many patients experience after both infections with the virus itself as well as soon after receiving the vaccines developed to prevent it.

Keywords: Mucosal ulceration, COVID-19, vaccination, herpangina.

INTRODUCTION

Mucosal ulcerations can manifest from several disease states, leaving an extensive list of differential diagnoses. Sites that can be affected include the oral cavity, the nasopharynx, the vaginal canal, and the vulva, as well as the esophagus, stomach, and small intestine. Common causes of the symptom include Major and Minor Recurrent Aphthous Stomatitis, Viral and Bacterial Infection, Autoimmune Disease, and the adverse event of several medications [1]. Deciphering the etiology of mucosal ulceration may prove difficult. However, several clinical clues can lead to a diagnosis. Age, associated symptoms, medical history, medications, and prior episodes of ulceration all supply helpful diagnostic information when attempting to find the cause. Within this paper, we will focus on viral associations with oral and genital mucosal involvement, including common etiologies such as Herpes Simplex Virus, Coxsackie B Virus, and Enterovirus, as well as a newly described association with the pandemic-causing COVID-19 virus that has struck the world for the last two years.

The association between mucosal ulceration, particularly in the oral cavity and genital areas, and viral infections such as Herpes Simplex Virus and Coxsackie B virus has long been described. These ulcers may be identified on the physical exam and are typically regionally associated with the virus that has caused them.

Herpangina, a diagnosis often associated with Coxsackie B virus or Enterovirus, is typically a pediatric illness involving the posterior pharynx becoming erythematous and ulcerated. Less common in adults, herpangina is highly contagious and has a usual course of an acute febrile illness followed by the onset of throat pain and ulceration. Herpangina is usually a self-limiting illness. However, reports have described progression to more severe diseases, including Viral Encephalitis, Aseptic Meningitis, and Acute Flaccid Paralysis [2]. The symptoms often do not recur without reinfection, and resolution of symptoms can be expected within 10-14 days of onset.

In the adult population, the expected etiology of mucosal ulceration changes. Within this demographic, viruses within the Herpes Virus family rise in prevalence, and the incidence of mucosal ulceration increases. Members of this family implicated in mucosal ulceration include Herpes Simplex Viruses 1 and 2, Cytomegalovirus, Varicella Zoster, Epstein - Barr virus, and Herpes Virus-8 [3]. Recurrence within this population can be as high as 40%. The clinical course is similar to that of pediatric viral ulceration, including a febrile prodrome with changes of sensation within the mucosa affected.

The coronavirus has recently seen increased mucosal involvement citations due to the COVID-19 pandemic. This family of Viruses has generally been associated with mild upper respiratory symptoms.

However, it has produced some impactful diseases such as Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), and the new SARS-2, referred to as COVID-19 [4]. This symptom has been increasing in incidence with the newest virus within the species, perhaps suggesting a structural or virulent change within the family. A systematic review has found that mucosal ulceration may occur in as many as 36% of patients found to be COVID-19 positive [5]. However, vaccination has been less frequently described as a common side effect of protecting against the disease.

Case 1: Oral Ulceration in the presence of COVID-19 Infection

A 27-year-old Asian American female presented to the clinic with a chief complaint of sore throat, cough, and fever. These symptoms started 24 hours prior to presentation. Her history of present illness was significant for sore throat, fatigue, fever, chills, headache, rhinorrhea, shortness of breath, cough, and joint pain that was localized to the cervical region and left hip. In addition, she describes her dysphagia as worsening over the last 24 hours. The patient had received the two-series Pfizer covid vaccine approximately one year prior to the onset of these symptoms.

A physical exam revealed numerous scattered raised vesicular lesions throughout the oral cavity and the posterior oropharynx (See Figure 1). Additionally, erythema of the soft palate was noted. There was lymphadenopathy present in the cervical region and the right axilla. There was no other cutaneous or mucosal involvement. The rest of the physical exam was unremarkable.

The patient was tested for COVID-19 using a rapid antigen test. The results of the test were positive. The patient was instructed on the CDC guidelines for quarantine and was discharged with medications to provide symptomatic relief. The patient's symptoms improved over the following week. However, the patient endorses tenderness of the right axilla approximately three weeks after the onset of symptoms.

Case 2: Oral and Vulvar Ulcerations status post Moderna COVID-19 Booster Vaccination

A 26-year-old female presented to the clinic with complaints of oral ulcerations and dysuria. These symptoms began 24 hours prior and were progressively worsening. Although the patient reported difficulty eating and drinking due to oral pain, she denied difficulty swallowing. She described her dysuria as a diffuse burning sensation while urinating, which persisted for a few minutes after urination. She denied urinary urgency or frequency and denied abnormal vaginal discharge. She denied any sexual risk behavior. She denied any similar symptoms in the past. She did not take any medications before the development of the lesions. Of note, the patient reported receiving a Moderna COVID-19 booster vaccine around 48 hours prior to the office visit. She described having fever, chills, and other flu-like symptoms for the first 24 hours post-vaccine, which resolved shortly before her current symptoms developed.

A physical exam of the mouth revealed numerous aphthous ulcerations with sharply demarcated borders and surrounding erythema on the buccal mucosa, the sublingual mucosa, and oropharynx. Cervical lymphadenopathy was present. On pelvic exam, multiple sharply demarcated ulcers were present on the vulvar mucosal surfaces, including the labia, surrounding the urethral opening, and scattered on the vestibule of the vagina. There was no cutaneous involvement. The remainder of the physical exam was unremarkable.

An extensive work-up to find the etiology of the ulcerations was performed. Complete blood counts, metabolic panel, and urinalysis were all within normal limits. Ulcer exudate bacterial cultures and Herpes Simplex Virus PCR were negative. Serologic testing for HIV, EBV, CMV, and syphilis were negative. The patient also tested negative for chlamydia and gonorrhea, and bacterial vaginosis and yeast infections were ruled out. Additionally, autoimmune markers, including ANA and complement levels, were within normal limits.

The patient was discharged with topical anesthetics, a course of corticosteroids, and instructions for supportive care. She reported significant improvement in symptoms around one week later.

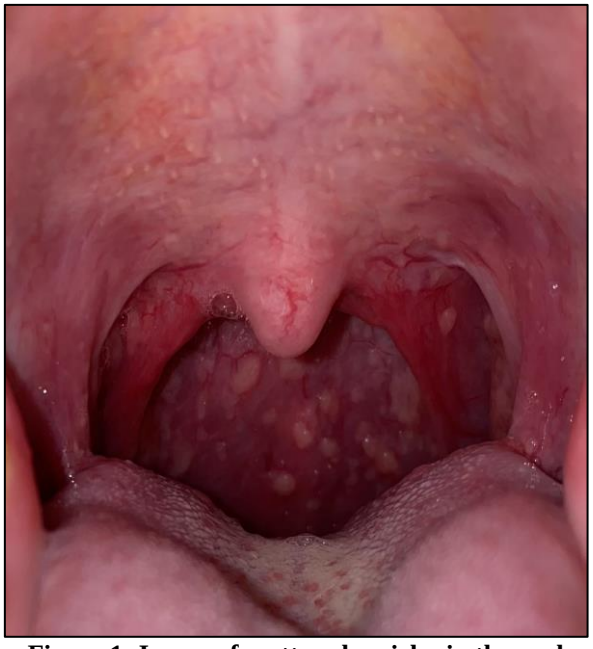

Figure 1: Image of scattered vesicles in the oral cavity and oropharynx

DISCUSSION

This report provides two cases of mucosal ulceration associated with the infection and vaccination for COVID- 19. Both cases were self-limited and did not progress beyond their presenting symptoms. These cases provide supporting evidence for the documented association between viral toxidrome and inflammatory ulceration of the mouth's mucosa and, less commonly, the vulvar region. The exact mechanism of herpangina and viral ulceration remains a topic of research. However, this is an increasingly prevalent finding within the general population as the exposure to Coronavirus, and its vaccination series increases.

While the mechanism remains unclear, it seems reasonable to postulate that the source of the insult may lie within the shared qualities of both the vaccine and the infection. The virology of COVID-19 has been researched extensively, and the spike protein was targeted as an opportunity to defend us against the disease. While assumed not to be virulent, the spike protein is a common component of both the virus itself as well as the vaccine. This protein, part of the virus's outer shell, is the molecule produced by the mRNA vaccines developed over the last two years. Once within the body, the mRNA vaccine enters the host's cells and uses the innate machinery to produce the spike protein and present it on its surface. The body then recognizes the foreign protein in a controlled manner, allowing the recipient to build an immune response that will be able to combat a potential later exposure to the virus.

The systemic response following the exposure to the spike protein on either the virus or the host's cells leads to an inflammatory reaction. This inflammation can present a spectrum of symptoms, such as fever, chills, myalgia, nausea, and vomiting. However, a severe inflammatory may lead to more impactful illness, including the aforementioned mucosal ulceration. As the inflammation reduces and the body returns to homeostasis, the ulceration and other symptoms subside, leading to a self-limited progression.

CONCLUSION

Understanding the broad spectrum of symptoms that may occur with COVID-19 vaccination and infection is essential. In this report, we present further evidence that viral infection, like other viral toxidromes, may include mucosal ulceration of the oral cavity and the genital region. In addition, with the high prevalence of patients that have either been exposed to COVID-19, been vaccinated for COVID-19, or both, it is even more vital that clinicians are aware that the illness may present with atypical symptoms, such as those presented here.

FINANCIAL DISCLOSURES

None reported.

SUPPORT

None reported.

AUTHOR CONTRIBUTIONS

All authors provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; All authors drafted the article or revised it critically for important intellectual content; All authors gave final approval of the version of the article to be published, and all authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Field, E. A., & Allan, R. B. (2003). Oral ulceration–aetiopathogenesis, clinical diagnosis and management in the gastrointestinal clinic. *Alimentary pharmacology & therapeutics*, *18*(10), 949-962. https://onlinelibrary.wiley.com/doi/abs/10.1046/j.1365-2036.2003.01782.x.
2. Corsino, C. B., Ali, R., & Linklater, D. R. (2022). Herpangina. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing.
3. Drago, F., Ciccarese, G., Merlo, G., Trave, I., Javor, S., Rebora, A., & Parodi, A. (2021). Oral and cutaneous manifestations of viral and bacterial infections: Not only COVID-19 disease. *Clinics in Dermatology*, *39*(3), 384-404. https://doi.org/10.1016/j.clindermatol.2021.01.021.
4. Coronavirus: the science explained - UKRI. "What Is Coronavirus? The Different Types of Coronaviruses." *UKRI*, 25 Mar. 2020, https://coronavirusexplained.ukri.org/en/article/cad0003/.
5. Erbaş, G. S., Botsali, A., Erden, N., Arı, C., Taşkın, B., Alper, S., & Vural, S. (2022). COVID-19-related oral mucosa lesions among confirmed SARS-CoV-2 patients: a systematic review. *International journal of dermatology*, *61*(1), 20-32. doi:10.1111/ijd.15889
6. "Understanding Mrna COVID-19 Vaccines." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html.