

RESEARCH LETTERS

A Cross-Sectional Study on Herpes Zoster Diagnosis in the Time of COVID-19

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ABSTRACT

Background: The COVID-19 pandemic has presented various cutaneous manifestations in COVID-19 positive patients, including rising cases of herpes zoster (HZ).

Objective: Our investigation sought to assess the proposed association between a positive COVID-19 test result and herpes zoster, and determine whether the COVID-19 pandemic has affected the overall incidence of HZ.

Methods: In this large cross-sectional study, patients were collected from University of California COVID Research Data Set (UC CORDS), a centralized, rapidly accumulating de-identified database and were then divided into those diagnosed with HZ before COVID test and those with HZ diagnosis after COVID testing. The total number of HZ cases to the total number of medical visits during the same six-month time frame (March to August) in 2019 and 2020 were also collected to assess if COVID-19 impacted the HZ incidence.

Results: A total of 608 patients were diagnosed with HZ from March 1 to August 31, 2020; of which, 2.1% (n=13) tested positive and 97.9% (n=595) tested negative for COVID-19. From March to August 2019 there were 4,349 reported HZ cases, and in comparison, there were 3,551 reported cases of HZ in 2020, a significant decrease ($\chi^2 = 90.6454$, $p < .00001$).

Conclusion: There was no evidence to substantiate an association between HZ and COVID-19. The overall decrease in HZ incidence may be due to patients less likely to seek medical care.

INTRODUCTION

Amidst the COVID-19 pandemic, several published reports note concomitant cases of herpes zoster (HZ) infections in COVID-19 positive patients, suggesting a potential co-existence of the two viruses, or an increased incidence of HZ in this population (1-4). In

order to investigate the credibility of this association and determine whether the COVID-19 pandemic has truly affected the overall incidence of HZ, we analyzed the University of California COVID Research Data Set (UC CORDS).

This centralized, de-identified database provides access to health records for patients with COVID-19 PCR testing across

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five UC medical institutions: Davis, Irvine, Los Angeles, San Diego and San Francisco (5). From March 1 to August 31, 2020, it contains patient demographics, medical history, medical visit type (including inpatient, outpatient, and telehealth), and COVID-19 status on 226,093 patients. Patients collected from the UC CORDS were divided into two subgroups, those with a diagnosis code for HZ before COVID test and those with HZ after COVID testing within two months, prior or subsequent, of each other, to assess whether one infection may indicate the development of the other.

METHODS

To analyze whether there was an increase in the HZ condition rate during the pandemic, we compared the total number of HZ cases to the total number of medical visits during the same six-month time frame (March to August) in 2019 and 2020 using the general de-identified UC health data warehouse (UCHDW).

Statistical analysis was completed using chi-squared tests to determine a significant relationship between those with or without HZ and COVID-19 infections.

RESULTS

To analyze whether there was an increase in the HZ condition rate during the pandemic, we compared the total number of HZ cases to the total number of medical visits during the same six-month time frame (March to August) in 2019 and 2020 using the general de-identified UC health data warehouse (UCHDW).

Statistical analysis was completed using chi-squared tests to determine a significant

relationship between those with or without HZ and COVID-19 infections.

A total of 608 patients were diagnosed with HZ from March 1 to August 31, 2020; of which, 2.1% (n=13) tested positive and 97.9% (n=595) tested negative for COVID-19 (Table 1). When compared to the overall COVID-19 positive test rate of 3.9% in the UC CORDS, the incidence of COVID-19 was lower in patients with HZ ($\chi^2 = 4.9331$, $p=.0264$). Among patients with an HZ diagnosis prior to COVID-19 testing, only one patient (0.3%) developed HZ within two months prior to COVID-19 diagnosis. Comparatively, among patients with a HZ diagnosis within two months subsequent to COVID-19 testing, only three patients (1.0%) tested positive; one of which was diagnosed with HZ on the same day as COVID-19.

Table 1. Patients with Herpes Zoster Diagnosis who underwent COVID testing (UC CORDS) in March to August 2020

Condition (age range, avg age)	Total, n	COVID-19 (+), n (%)	COVID-19 (-), n
HZ diagnosis from March 1 to August 31, 2020 (8-89, 59y)	608	13 (2.1%)	595
<i>Male</i>	248	2 (0.8%)	246
<i>Female</i>	360	11 (3.1%)	349
HZ diagnosis within 2 months prior to COVID-19 test (11-89, 60y)	340	1 (0.3%)	339
<i>Male</i>	138	0 (0%)	138
<i>Female</i>	202	1 (0.5%)	201
HZ diagnosis within 2 months after COVID-19 test (11-89, 58y)	297	3 (1.0%)	294
<i>Male</i>	130	1 (0.8%)	129
<i>Female</i>	167	2 (1.2%)	165

Within the UCHDW, from March to August 2019 there were 4,349 reported HZ cases (n=1,697,851), and in comparison, there were 3,551 reported cases of HZ in 2020 (n=1,718,275) (Table 2). These results

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demonstrate an HZ condition rate of 0.0026 in 2019 and 0.0021 in 2020 ($\chi^2 = 90.6454$, $p < .00001$), indicating a significant decrease.

Table 2. Cases of Herpes Zoster Recorded During COVID-19 Pandemic March-August 2019 vs. 2020 (De-Identified UCHDW)

Time Period (avg age)	Herpes Zoster cases, n	Condition Rate
March-August 2019 (61y)	4349	0.0026
March-August 2020 (60y)	3551	0.0021

DISCUSSION

In this study we did not find evidence to substantiate an association between HZ diagnosis and COVID-19. Additionally, the data suggests that, during the COVID-19 pandemic, there has been no increase in medical visits for HZ in the UC medical system, both in person and by telehealth. Limitations include use of tertiary center data, lack of clinical details, such as HZ location or disease treatment, due to de-identified data, rapidly changing testing criteria and availability, and inability for longitudinal follow-up. We recognize the overall number of HZ cases may be lower due to less patients seeking medical care due to the pandemic, leading to an apparent negative correlation between HZ and COVID-19. Future studies with larger databases may help better assess the details of this relationship.

CONCLUSION

In this limited dataset, there was no evidence to substantiate an association between HZ and COVID-19 infection, nor was there an increase in the number of

cases of HZ during the time of the COVID-19 pandemic.

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