



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Short Communication

Increased number of Herpes Zoster cases in Brazil related to the COVID-19 pandemic



Célia Márcia Fernandes Maia^{a,*}, Nelson Pereira Marques^b, Edson Hilan Gomes de Lucena^c, Luiz Fernando de Rezende^a, Daniella R. Barbosa Martelli^a, Hercílio Martelli-Júnior^{a,d}

^a Health Science Program, State University of Montes Claros, Montes Claros, Minas Gerais, Brazil

^b Department of Oral Diagnosis, Dental School, University of Campinas, FOP-UNICAMP, Piracicaba, São Paulo, Brazil

^c Clinical and Social Dentistry Department, Federal University of Paraíba, João Pessoa, Brazil

^d Center for Rehabilitation of Craniofacial Anomalies, School of Dentistry, University of Alfenas, Minas Gerais, Brazil

ARTICLE INFO

Article history:

Received 14 December 2020

Received in revised form 2 February 2021

Accepted 7 February 2021

Keywords:

COVID-19

Herpes Zoster

Pandemics

ABSTRACT

Coronavirus 2019 (COVID-19), caused by the pathogen SARS-CoV-2, was declared a pandemic in March 2020. Recently, studies have discussed reports of patients infected with COVID-19 associated with vesicular manifestations of Herpes Zoster. The objective of this study was to compare the data from the Unified Health System (SUS) on the number of diagnoses of Herpes Zoster from March to August from 2017 to 2019, with the same period in 2020, in the five Brazilian regions (North, Northeast, Southeast, South, and Midwest). The data were extracted from the public database (DATASUS) of Brazil's Ministry of Health. The data showed an increase in the number of Herpes Zoster diagnoses over the years and the negative impact from the COVID-19 disease, revealing an average increase corresponding to an extra 10.7 cases per million inhabitants during the pandemic in all Brazilian Regions. Therefore, although the association between HZ and COVID-19 is not well established, we observed in this study an increase in HZ cases during the COVID-19 pandemic, which suggests a correlation between these diseases.

© 2021 The Authors. Published by Elsevier Ltd on behalf of International Society for Infectious Diseases. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Coronavirus 2019 (COVID-19), caused by the pathogen SARS-CoV-2, was declared a pandemic by the World Health Organization (WHO) in March 2020 (Recalcati, 2020). Studies have discussed reports of patients infected with COVID-19 associated with vesicular manifestations of Herpes Zoster (HZ) (Fernandez-Nieto et al., 2020; Llamas-Velasco et al., 2020; Marzano et al., 2020; Ortega-Quijano et al., 2020; Recalcati, 2020). Recalcati (2020) reported for the first time the involvement of skin manifestations with the COVID-19 infection.

Varicella and Herpes Zoster are diseases caused by the Varicella-zoster virus (VZV) (Elsaie and Nada, 2020), which in its initial phase causes chickenpox ("Chickenpox"). This virus remains latent within the dorsal root of the trigeminal ganglion, and after its reactivation, it manifests itself as HZ (Elsaie and Nada, 2020). The objective of this study was to compare the data from the

Unified Health System (SUS) on the number of diagnoses of Herpes Zoster from March to August 2017–2019, with the same period of 2020, in the five Brazilian regions (North, Northeast, Southeast, South, and Midwest).

The analyzed data were extracted from the public database (DATASUS) (<http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sia/cnv/qauf.def>) of Brazil's Ministry of Health (Anon, 2020a). Table 1 shows an increase in the number of HZ diagnoses over the years, and Table 2 shows the negative impact of the COVID-19 disease, revealing an increase in the number of HZ diagnoses in all Brazilian Regions. Descriptive analysis showed that the percentage of new HZ cases per million inhabitants has increased in all Brazilian regions, ranging from +23.6% in the Northwest to +77.2% in Midwest Region. The overall Brazilian average increase reached +35.4%, corresponding to an average increase of over 10.7 cases per million inhabitants during the COVID-19 pandemic.

The association between HZ and COVID-19 is unknown to date, but an increase in HZ infections during the COVID-19 outbreak has been observed (Llamas-Velasco et al., 2020). The COVID-19 infection can cause changes in leukocyte levels, resulting in a decrease in cell count, mainly of CD4 + T cells, CD8 + T cells, B cells, and natural killer cells (Tartari et al., 2020). The interference of

* Corresponding author at: Health Science Program, State University of Montes Claros Campus, Avenue Cula Mangabeira, N° 562, Cândida Câmara, Montes Claros, CEP 39401-696, Minas Gerais, Brazil.

E-mail addresses: celiamaiap@terra.com.br (C.M.F. Maia), neomarques@hotmail.com (N.P. Marques), ehglucena@yahoo.com.br (E.H.G. de Lucena), hmjunior2000@yahoo.com (H. Martelli-Júnior).

Table 1

The number of Herpes Zoster diagnoses reported by the Brazilian public health system in all geographical regions between March and August 2017–2020.

Regions of Brazil	State	Mar-Aug 2017 (n)	Mar-Aug 2018 (n)	Mar-Aug 2019 (n)	Mar-Aug 2020 (n)
North	Acre Amapá Amazonas Pará Rondônia Roraima Tocantins	474	583	630	708
Northeast	Alagoas Bahia Ceará Maranhão Paraíba Pernambuco Piauí Rio Grande do Norte Sergipe	2086	2272	2218	2709
Southeast	Espírito Santo Minas Gerais Rio de Janeiro São Paulo	1676	2053	2446	3003
South	Paraná Rio Grande do Sul Santa Catarina	1161	1185	1078	1447
Midwest	Distrito Federal ^a Goiás Mato Grosso Mato Grosso do Sul	294	463	649	828
Total		5691	6556	7021	8695

^a The Federal District encompasses the capital of Brazil, Brasília.**Table 2**

Difference between the average per million of inhabitants with Herpes Zoster diagnoses reported by the Brazilian public health system in all geographical regions between March and August from 2017 to 2019 compared to the same period in 2020.

Regions of Brazil	Mar-Aug 2017–2019 (n/per million)	Mar-Aug 2020 (n/per million)	Difference (%/per million) ^a
North	2.65	3.33	+25.7%
Northeast	10.32	12.75	+23.6%
Southwest	9.69	14.13	+45.8%
South	5.38	6.81	+26.6%
Midwest	2.2	3.9	+77.2%
Total	30.2	40.9	+35.4%

^a Increase in the number of Herpes Zoster diagnoses in 2020.

SARS–COV-2 in the dysregulation of the immune system associated with physical and mental stress may be one factor involved in the reactivation of VZV (Pona et al., 2020). In the presence of vesicular lesions, we emphasize the importance of HZ diagnoses through Tzanck smear, PCR test from vesicular fluid, or skin biopsy to exclude any infection by other viruses (Llamas-Velasco et al., 2020).

Regarding COVID-19 in Brazil, the updated data on 01/02/2021 from the Brazilian Ministry of Health, Coronavirus//BRAZIL (<https://covid.saude.gov.br/COVID-19>) (Coronavirus//BRASIL, n.d.) (Anon, 2020b) reported a total of 9,204,731 confirmed cases; 8,027,042 recovered cases; 224,504 confirmed deaths; incidence/100 thousand inhabitants.: 43,801; mortality/100 thousand inhabitants.: 106,8. One of the limitations of this study, we should mention cases not reported to the Brazilian public health system, which suggests that the actual incidence could be higher.

Therefore, although the association between HZ and COVID-19 is not well established, we observed in this study an increase in HZ cases during the COVID -19 pandemic, which suggests a correlation between these diseases. Controlled clinical studies are necessary to clarify whether this relationship is causal or circumstantial.

Conflict of interest

Authors do not have any commercial or financial conflict of interest.

Funding source

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethical approval

None.

References

- Banco de dados público (DATASUS). Ministério da Saúde Do Bras n.d. <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sia/cnv/qauf.def> (accessed November 17, 2020).
- Coronavirus//BRASIL. Ministério Da Saúde Do Bras n.d. <https://covid.saude.gov.br/COVID-19> (accessed February 01, 2021).
- Elsaie ML, Nada HA. Herpes zoster (shingles) complicating the course of COVID19 infection. *J Dermatolog Treat* 2020;12:1–3, doi:<http://dx.doi.org/10.1080/09546634.2020.1782823>.
- Fernandez-Nieto D, Ortega-Quijano D, Suarez-Valle A, Burgos-Blasco P, Jimenez-Cauhe J, Fernandez-Guarino M. Comment on: “To consider varicella-like exanthem associated with COVID-19, virus varicella zoster and virus herpes simplex must be ruled out. Characterization of herpetic lesions in hospitalized COVID-19 patients”. *J Am Acad Dermatol* 2020;83:e257–9, doi:<http://dx.doi.org/10.1016/j.jaad.2020.06.063>.
- Llamas-Velasco M, Rodríguez-Jiménez P, Chicharro P, De Argila D, Muñoz-Hernández P, Daudén E. Reply to “Varicella-like exanthem as a specific COVID-19-associated skin manifestation: Multicenter case series of 22 patients”: to consider varicella-like exanthem associated with COVID-19, virus varicella zoster and virus herpes simplex must be ruled ou. *J Am Acad Dermatol* 2020;83:e253–4, doi:<http://dx.doi.org/10.1016/j.jaad.2020.04.180>.
- Marzano AV, Genovese G, Fabbrocini G, Pigatto P, Monfrecola G, Piraccini BM, et al. Varicella-like exanthem as a specific COVID-19-associated skin manifestation: Multicenter case series of 22 patients. *J Am Acad Dermatol* 2020;83:280–5, doi:<http://dx.doi.org/10.1016/j.jaad.2020.04.044>.
- Ortega-Quijano D, Jimenez-Cauhe J, Burgos-Blasco P, Jimenez-Gomez N, Fernandez-Nieto D. Reply to “Varicella-like exanthem as a specific COVID-19-associated skin manifestation: multicenter case series of 22 patients”: discussing specificity. *J Am Acad Dermatol* 2020;83:e87, doi:<http://dx.doi.org/10.1016/j.jaad.2020.04.156>.
- Pona A, Jiwani RA, Afriyie F, Labbe J, Cook PP, Mao Y. Herpes zoster as a potential complication of coronavirus disease 2019. *Dermatol Ther* 2020;30:e13930, doi:<http://dx.doi.org/10.1111/dth.13930>.
- Recalcati S. Cutaneous manifestations in COVID-19: a first perspective. *J Eur Acad Dermatol Venereol* 2020;34:e212–3, doi:<http://dx.doi.org/10.1111/jdv.16387>.
- Tartari F, Spadotto A, Zengarini C, Zanoni R, Guglielmo A, Adorno A, et al. Herpes zoster in COVID-19-positive patients. *Int J Dermatol* 2020;59:1028–9, doi:<http://dx.doi.org/10.1111/ijd.15001>.