



Epidemiologic Trends in Notified Lichen Planus and Psoriasis Diagnoses during the COVID-19 Pandemic in Brazil

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Abstract

Introduction: Simultaneously to the onset of Coronavirus disease (COVID-19), many skin diseases have been diagnosed, including systemic lupus, lichen planus and psoriasis. The disruption of self-tolerance and activation of autoimmune responses by SARS-CoV-2 cross-reactivity with host cells accounts for this coincidence.

Objectives: To evaluate the number of clinical consultations of Psoriasis (PS) and Lichen Planus (LP) in Brazil before and during the pandemic period.

Material and Methods: We compared the data from the Brazilian Unified Health System on the number of LP and PS diagnoses.

Results: An increase of +8,016 (+26%) can be observed for clinical consultations of patients with PS in the pandemic period, with a cohesive distribution in all five geographic regions. In the same way, the number of LP increased +86 (+42%) in Brazil, compared with the period before the pandemic.

Conclusion: Lichen planus and psoriasis diagnosis should be carefully monitored during COVID-19 pandemic. Studies with other inflammatory autoimmune diseases are needed to compare and confirm the worry with the present results.

Keywords: COVID-19; Lichen planus; Pandemics; Autoimmune diseases

Introduction

Inside a large territory (8,515,767,049 km), the Brazilian population (about 213 million people) is distributed in 26 States within 5,570 cities divided into five geographic zones (<https://www.ibge.gov.br/>). New cases of COVID-19 disease continue to increase in the country, with about 22 million positive patients and 617 thousand deaths reported by December 2021. Omicron variant uncertainties prevent the ending of COVID-19 pandemic (<https://covid.saude.gov.br/>). Simultaneously to the onset of coronavirus disease (COVID-19), many skin diseases have been diagnosed, including systemic lupus [1], lichen planus [2], and psoriasis [3]. The disruption of self-tolerance and activation of autoimmune responses by SARS-CoV-2 cross-reactivity with host cells accounts for this coincidence [4].

Lichen Planus (LP) is an inflammatory immune disease most affecting skin and oral mucosa [2]. It has a prevalence of 4% in adult population and 20% of these would require systemic treatment [5]. Clinically, LP characteristics vary according to the location.

Although its pathogenesis is not fully known, the infiltrate mostly contains cytotoxic CD8+ T lymphocytes that accounts for the basal keratinocyte degeneration in the epithelium and nearby the affected keratinocytes [6]. LP increased stress and morbidity impacts the quality of life of these individuals.

Psoriasis (PS) is an immune-mediated dermatological disorder, chronic, that affects

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approximately 125 million individuals worldwide. Your most common form of presentation is plaque psoriasis, accounting for the vast majority of cases of this condition [3]. The aforementioned form of presentation presents as scaly and erythematous spots or plaques that occur more frequently on extensor surfaces, but which can reach intertriginous areas. Your epidemiology reports an involvement without sex predilection, being more common in adults than in children. Your pathogenesis is based on a feed-forward mechanism of inflammation, mainly comprising the type 17 helper T-cell pathways (TH17). PS is caused by a combination of genetic and environmental causes, and the latter can exacerbate the disease's symptoms. There are other morphological variants of it, such as guttate, erythrodermic and pustular [7].

Material and Methods

In order to access this issue further, this study aims to compare the data from the Brazilian Unified Health System (SUS) (DATASUS, <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sia/cnv/qauf.def>) on the number of LP and PS diagnosis in the course of the Brazilian COVID-19 pandemic.

In this report, the difference was observed in the number of PS clinical appointments in all five Brazilian geographic macro-regions before (March 2018 to May 2019) and during the pandemic period (March 2020 to May 2021), and the frequency of the LP, also during these two periods (January 2017 to June 2021).

Results

When analyzing Table 1, an increase of +8,016 (+26%) can be observed for clinical consultations of patients with PS in the pandemic period, with a cohesive distribution in all five geographic regions. The macro-region with the highest increase in consultations was the southeast, with an increase of +4,386 (+30%), but by demographic proportion, the most significant increase was in the southern region, with an increase of +33%.

During 2017 to 2019, the mean diagnosis number of new LP cases was 203 per month. In 2020, the number was 264, an increasing of approximately 30%. In 2021, the increasing was constant for the five Brazilian geographical areas and ranged from +20% (North) to +53% (Midwest). The comparison between periods showed an overall increasing of +86 (+42%) cases (Table 2).

Discussion

COVID-19 individuals exhibited autoantibodies, which are a characteristic of autoimmune disorders. Furthermore, following COVID-19 infection, some individuals have developed autoimmune illnesses such as Guillain-Barre syndrome or systemic lupus erythematosus probably due to the disruption of self-tolerance and the activation of autoimmune responses by SARS-CoV-2 host cell

cross-reactivity [8]. The induction of damage by an infectious agent will be the product of the relationship between the agent's power to modulate the host's homeostatic mechanisms and response to that aggressor. Tumor necrosis factor- α , interleukin-6, and interleukin-17 are pro-inflammatory cytokines with protective functions that induce the inflammatory response, but it can cause destructive effects [9]. Knowing that both PS and LC are characterized by dysregulation in the production of cytokines, their associations and more severe alterations may become logical [6].

The emerging literature reports that the influence of COVID-19 infection on PS, as well as on LC, may be related to the higher levels of stress and anxiety reported in the Brazilian population due to the social, psychological, and economic limitations caused by the pandemic, as some diseases, such as those mentioned above, may present these factors as risk factors, corroborating their primary appearance or occurrence of recurrent crises [6]. Also, the fact that the activity of the diseases themselves, as well as the use of immunosuppressive therapies are related to greater immunosuppression and virus and bacterial infections are more likely to occur [10]. Yet, the scientific plausibility of the risk of patients with these conditions of developing a severe condition of COVID-19 is still insufficient [11,12].

Regarding drug therapies that can be applied to the treatment of these conditions, currently, the danger posed by SARS-CoV-2 infection in patients with immunosuppressive therapies is little known [13]. However, based on previous infections likelihood in individuals with chronic immunosuppressive therapy, such as Influenza A (H1N1), which was able to exacerbate psoriatic outbreaks [14,15], the importance is highlighted of a reassessment of the therapeutic approaches to these patients and opens the discussion on whether the withdrawal or control of the dose of these medications is necessary.

A recent study reports the bias that the use of immunosuppressive therapies can influence the likelihood of infectious problems and dissemination of COVID-19 [13]. Even though a slight increase in the likelihood of infections in this group is well documented [16], the European League against Rheumatism, the American College of Rheumatology and the Italian Society of Rheumatology believe that suspension without justification for use of these drugs is capable of causing crises of these types of disease that can be even more harmful than the therapy itself [15]. In this sense, prior to discontinue a chronic therapy with immunosuppressant's, it is necessary to analyze not only the infection's profile, but also the condition's inflammatory nature itself [17,18].

Also, in the context of drug therapies, we have Hydroxychloroquine (HCQ), which in the current scenario deserves some attention. It consists of a drug initially approved for the treatment of malaria, and which later had its use extended to the treatment of autoimmune diseases, including systemic lupus erythematosus [19,20]. It may

Table 1: Difference in the number of clinical consultations of psoriasis cases in all five Brazilian geographical regions between the pre-pandemic period (March 2018 to May 2019) and the pandemic period (March 2020 to May 2021).

Region	State	2018-2019	2020-2021	Difference	%
North	Acre; Amap; Amazonas; Pará; Rondônia; Roraima; Tocantins	1,987	2,470	483	25
Northeast	Alagoas; Bahia; Ceará; Maranhão; Paraíba; Pernambuco; Piauí; Rio Grande do Norte; Sergipe	6,114	6,783	669	11
Southeast	Espírito Santo; Minas Gerais; Rio de Janeiro; São Paulo	14,628	19,014	4,386	30
South	Paraná; Rio Grande do Sul; Santa Catarina	5,703	7,573	1,870	33
Midwest	Distrito Federal; Goiás; Mato Grosso; Mato Grosso do Sul	2,329	2,937	608	26
Total	Brazil	30,761	38,777	8,016	26

Table 2: Difference between the monthly mean number of lichen planus diagnoses in the pre-pandemic period (2017-2019) with the pandemic period of 2020 and 2021.

Regions of Brazil	State	2017-2019	2020	2021	Pre-pandemic versus 2020 (n) (%)	Pre-pandemic versus 2021 (n) (%)
North	Acre; Amapá; Amazonas; Pará; Rondônia; Roraima; Tocantins	13	13	16	0 (0)	+3 (20)
Northeast	Alagoas; Bahia; Ceará; Maranhão; Paraíba; Pernambuco; Piauí; Rio Grande do Norte; Sergipe	35	53	51	+18 (51)	+16 (45)
Southeast	Espírito Santo; Minas Gerais; Rio de Janeiro; São Paulo	96	122	139	+26 (27)	+43 (45)
South	Paraná; Rio Grande do Sul; Santa Catarina	38	49	51	+11 (28)	+13 (35)
Midwest	Distrito Federal; Goiás; Mato Grosso; Mato Grosso do Sul	21	28	32	+7 (33)	+11 (53)
Total	Brazil	203	264	289	+62 (30)	+86 (42)

also have potent antiviral activity, a fact that led to its investigation for COVID-19 treatment and promoted your dissemination [21]. However, HCQ efficacy and safety have not yet been observed in sufficient RCT studies [22]. The literatures have already reported adverse dermatological effects resulting from treatment with HCQ, for example, new development or aggravation of psoriatic symptoms [23].

Thus, the indiscriminate use of HCQ, which paradoxically contributes to the population's own vulnerability, the search for medication of this type and the alarming situation of self-medication [24], is important and should be discussed, especially when it comes to patients with PS and considering the scenario of the higher number of clinical consultations of these patients during the pandemic period. In 15 studies included in the literature with the follow-up of 18 patients with this condition, it was shown that 50% of them had a new diagnosis of PS and 50% had recurrence or exacerbation of this condition with a previous diagnosis [25], however, more studies should be directed to better assess this relationship.

A limitation of the present study was that we did not have knowledge about the type of LP and PS, as well as the anatomical locations of involvement. But our findings did demonstrate increased new LP and PS cases during the pandemic phase, in Brazil. These findings highlight the importance of closely comorbidity observation in individuals with primary LP and PS. LP and PS diagnosis should be carefully monitored during COVID-19 pandemic. Studies with other inflammatory autoimmune diseases are needed to compare and confirm the worry with the present results.

Conclusion

Although, the present report agrees with the effectiveness of evaluating data records for analyzing specific issues in selected subpopulations. During the COVID-19 pandemic, this tool can quickly produce indications of the possibility of increasing the vulnerability of certain groups of diseases and can support the construction of management strategies in a timely manner. In addition, the use of this method is suggested in studies that aim to provide information on the hypothesis that patients who use immunosuppressive therapy are more likely to have problems with SARS-COV-2 contamination, or even of associating levels of stress to the occurrence of this condition.

Authors Contribution

Nelson Pereira Marques: Conceptualization; Data Curation; Formal analysis; Investigation; Methodology; Roles/Writing - original draft; Writing - review & editing. Quemuel Pereira da Silva: Formal analysis; Investigation; Methodology; Writing - review &

editing. Daniella Reis Barbosa Martelli: Conceptualization; Formal analysis; Writing - review & editing. Edson Gomes de Lucena: Conceptualization; Data Curation; Formal analysis; Methodology. Paulo Rogério F. Bonan: Formal analysis; Investigation; Methodology; Roles/Writing - original draft; Writing - review & editing. Hercílio Martelli-Júnior: Conceptualization; Formal analysis; Methodology; Project administration; Supervision; Roles/Writing - original draft; Writing - review & editing.

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