

## Impact of the COVID-19 pandemic on the routine of an infusion center of immunobiologicals from a Brazilian University Hospital

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Brazil. We analyzed the records of 141 patients (107 females, 34 males; mean age: 52.0±14.0 years; range, 21 to 75 years) in the year prior to the pandemic (2019-2020) and the records of the same individuals in the first years of the pandemic (2020-2021) to compare the results.

Table 1 shows the main indications for infusion treatment and the used medications. In this sample, 101 (71.6%) lived in the same city as the infusion center, and 40 (28.1%) were from municipalities nearby. Fifty-five (39.0%) and 63 (44.7%) individuals missed at least one infusion in the first and second years, respectively (p=0.26). Table 2 shows some characteristics of

We read with interest the article by Zateri et al.<sup>1</sup> The loss of intravenous treatment due to the fear of contracting coronavirus disease 2019 (COVID-19) has also been a preoccupation at our infusion center in Brazil. The correct use of medication is a key factor for treatment success. In our country, several outpatient infusion centers care not only for the local population but also for those who live in the cities nearby and are subject to dislocation for attendance. Thus, we also did a survey to estimate how many of them had failed to receive the treatment during the first year of the COVID-19 pandemic and found some data that, although a bit different from those of Zateri et al.,<sup>1</sup> may complement their observations.

Our survey was done by analyzing the charts of patients with appointments to receive the infusions from a single center that cares for patients from the Public Health System in South

**Table 1.** Main indications for treatment in the studied infusion center

|                              | n  | %    |
|------------------------------|----|------|
| <b>Indications</b>           |    |      |
| Rheumatoid arthritis         | 74 | 52.4 |
| Systemic lupus erythematosus | 22 | 15.6 |
| Spondyloarthritis            | 20 | 14.1 |
| Vasculitis                   | 11 | 7.8  |
| Sarcoidosis                  | 3  | 2.1  |
| Sjögren                      | 3  | 2.1  |
| Others                       | 8  | 5.6  |
| <b>Medications</b>           |    |      |
| Infliximab                   | 43 | 30.4 |
| Rituximab                    | 29 | 20.6 |
| Tocilizumab                  | 28 | 19.9 |
| Cyclophosphamide             | 25 | 17.7 |
| Abatacept                    | 14 | 9.9  |
| Others                       | 2  | 1.4  |

the sample that missed infusions in comparison with those that did not. For this comparison, patients with the articular indication (rheumatoid arthritis, spondylarthritis, and psoriatic arthritis) were grouped together, as well as those with vasculitis (e.g., lupus, Behçet, and polyangiitis with granulomatosis). Prior to the pandemic, patients with vasculitis were more compliant than those with arthritis as the main indication. Table 2 also shows that the patients that missed the infusion in the first year had the same profile as those that missed it in the second year.

Our results show that, despite having a great number of patients that missed their infusions

even prior to the pandemic, this infusion center did not suffer a major impact during the COVID-19 pandemic. The only observed difference was that patients with vasculitis were more compliant with their infusions prior to than during the pandemic (16.3% vs. 25.3% missing infusions, respectively) despite the numbers not being statistically significant. It is possible to assume that as these individuals had more severe disease, they were more careful than others, coming into treatment more regularly in the first observed period. However, with the advent of the pandemic, the frequency became similar in the two groups. Konak et al.,<sup>2</sup>

**Table 2.** Profile of patients missing infusions in the year prior to the pandemic and in the first year of the pandemic

| Year 2019-2020 (prior to pandemics)                                     | With loss (n=55) |      |            |       | Without loss (n=86) |      |            |           | p     |
|---|------------------|------|------------|-------|---------------------|------|------------|-----------|-------|
|   | n                | %    | Median age | IQR   | n                   | %    | Median age | IQR       |       |
| Sex   |                  |      |            |       |                     |      |            |           | 0.76  |
| Female  | 41               |      |            |       | 66                  |      |            |           |       |
| Male  | 14               |      |            |       | 20                  |      |            |           |       |
| Median age (IQR)-years  |                  |      | 54         | 39-61 |                     |      | 52         | 41.5-57.2 | 0.79  |
| Living in the city of infusion center                                   | 37               | 67.2 |            |       | 64                  | 74.4 |            |           | 0.44  |
| Indication articular/vasculitis (*)                                     | 43               | 78.8 |            |       | 49                  | 36.9 |            |           | 0.01† |
|   | 9                | 16.3 |            |       | 30                  | 34.8 |            |           |       |
| Year 2020-2021 (in the pandemics)                                       | With loss (n=63) |      |            |       | Without loss (n=78) |      |            |           | p     |
|   | n                | %    | Median age | IQR   | n                   | %    | Median age | IQR       |       |
| Sex   | 47               |      |            |       |                     |      |            |           | 0.74  |
| Female  | 16               |      |            |       | 60                  |      |            |           |       |
| Male  |                  |      |            |       | 18                  |      |            |           |       |
| Median age (IQR)-years  |                  |      | 52         | 39-61 |                     |      | 51.5       | 43-59.2   | 0.76  |
| Living in the city of infusion center                                   | 46               | 73.0 |            |       | 55                  | 70.5 |            |           | 0.24  |
| Indication articular/vasculitis (*)                                     | 45               | 71.4 |            |       | 47                  | 60.2 |            |           | 0.40  |
|   | 16               | 25.3 |            |       | 23                  | 29.4 |            |           |       |
| Comparison of patients missing infusion during 2019-2020 with 2020-2021 | 2019-2020 (n=55) |      |            |       | 2020-2021 (n=63)    |      |            |           | p     |
|   | n                | %    | Median age | IQR   | n                   | %    | Median age | IQR       |       |
| Sex   |                  |      |            |       |                     |      |            |           | 0.99  |
| Female  | 41               |      |            |       | 46                  |      |            |           |       |
| Male  | 14               |      |            |       | 16                  |      |            |           |       |
| Median age (IQR)-years  |                  |      | 54         | 39-61 |                     |      | 52         | 39-60     | 0.85  |
| Living in the city of infusion center                                   | 37               | 67.2 |            |       | 46                  | 73.6 |            |           | 0.33  |
| Indication articular/vasculitis (*)                                     | 43               |      |            |       | 45                  |      |            |           | 0.25  |
|   | 9                |      |            |       | 16                  |      |            |           |       |

IQR: Interquartile range.

studying the same issue, observed that patients with more systemic involvement missed fewer infusions.

The differences observed in our work from those of Zateri et al.<sup>1</sup> may be due to the different social, cultural, and economic backgrounds of the samples.

**Ethics Committee Approval:** The study protocol was approved by the Evangelic Mackenzie School of Medicine Ethics Committee (date: 09.21.2022, no: 4.991.156). The study was conducted in accordance with the principles of the Declaration of Helsinki.

**Patient Consent for Publication:** A written informed consent was obtained from each patient.

**Data Sharing Statement:** The data that support the findings of this study are available from the corresponding author upon reasonable request.

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