

## COMPARATIVE ANALYSIS OF THE DATA ON THE INFLUENCE OF THE SARS-COV-2 PANDEMIC ON BONE MARROW TRANSPLANTATION AND THE PROTOCOLS ADOPTED IN BRAZIL BETWEEN MAY AND JUNE 2020.

Fernando Barroso Duarte<sup>1</sup>, Anna Thawanny Gadelha Moura<sup>2</sup>, Abrahão Elias Hallack Neto<sup>3</sup>, Adriana Seber<sup>4</sup>, Afonso Celso Vigorito<sup>5</sup>, André Luís Gervatoski Lourenço<sup>6</sup>, Andresa Lima Melo<sup>7</sup>, Beatrice Araújo Duarte<sup>8</sup>, Beatriz Stela Gomes de Souza Pitombeira Araújo<sup>9</sup>, Carmem Bonfim<sup>10</sup>, Celso Arrais<sup>11</sup>, César Barian<sup>12</sup>, Cilmara Kuwahara<sup>13</sup>, Decio Lerner<sup>14</sup>, Eduardo José de Alencar Paton<sup>15</sup>, Garles Miller Matias Vieira<sup>16</sup>, George Maurício Navarro Barros<sup>17</sup>, Gisele Loth<sup>18</sup>, Gustavo Machado Teixeira<sup>19</sup>, Jayr Schmidt Filho<sup>16</sup>, João Victor Piccolo Feliciano<sup>20</sup>, Laura Maria Fogliatto<sup>21</sup>, Leandro Celso Grilo<sup>22</sup>, Leticia Navarro Gordan Ferreira Martins<sup>23</sup>, Liane Esteves Daudt<sup>24</sup>, Luís Fernando da Silva Bouzas<sup>25</sup>, Marcio Soares Monção<sup>26</sup>, Marco Aurelio Salvino<sup>27</sup>, Maria Claudia Moreira<sup>28</sup>, Maria Cristina M Almeida Macedo<sup>29</sup>, Marina Assirati Coutinho<sup>30</sup>, Nelson Hamerschlag<sup>31</sup>, Ricardo Chiattoni<sup>5</sup>, Roberto Luiz da Silva<sup>29</sup>, Rodolfo Soares<sup>32</sup>, Rony Schaffel<sup>33</sup>, Roselene Mesquita Augusto Passos<sup>34</sup>, Thaisa Marjore Menezes Viana<sup>1</sup>, Tatiana Dias Marconi Monteiro<sup>35</sup>, Vanderson Rocha<sup>36</sup>, Vaneuza Araújo Moreira Funke<sup>37</sup>, Vergílio Antônio Rensi Colturato<sup>38</sup>, Victor Gottardello Zecchin<sup>39</sup>, Wellington Moraes de Azevedo<sup>40</sup>, Yana Augusta S. Novis<sup>12</sup>, Leandro de Pádua Silva<sup>41</sup>, Antonella Zanette<sup>42</sup>, Renato Luiz Guerino Cunha<sup>36</sup>, Evandro Maranhão Fagundes<sup>43</sup>, Angelo Atalia<sup>44</sup>, Romélia Pinheiro Gonçalves Lemes<sup>3</sup>, Juliana Folloni Fernandes<sup>45</sup>

<sup>1</sup> Hospital Universitário Walter Cantídio, Department of Surgery and Bone Marrow Transplantation – Fortaleza, Ceará, Brazil, <sup>2</sup> Universidade Federal do Ceará - Research Laboratory in Hemoglobinopathies and Genetics of Hematologic Diseases, Fortaleza, Brazil, <sup>3</sup> Hospital Universitário da Universidade Federal de Juiz de Fora - Department of bone marrow transplantation, Juiz de Fora, Minas Gerais, Brazil, <sup>4</sup> Hospital Samaritano - Department of bone marrow transplantation in pediatrics, São Paulo, Brazil, <sup>5</sup> Hospital das clínicas da Universidade Estadual de Campinas - Department of bone marrow transplantation, São Paulo, Brazil, <sup>6</sup> Hospital dos Fonecedores de Cana de Piracicaba - Department of bone marrow transplantation, Piracicaba, São Paulo, Brazil, <sup>7</sup> Grupo Acreditar – Oncologia DO'r - Department of bone marrow transplantation, Brasília, Distrito Federal, Brazil, <sup>8</sup> Centro Universitário Christus (UNICHRISTUS) – Medicine, Fortaleza, Ceará, Brazil, <sup>9</sup> Hospital Unimed - Department of Bone Marrow Transplantation, Fortaleza, Ceará Brazil, <sup>10</sup> Hospital Nossa Senhora das Graças – Department of bone marrow transplantation in pediatrics, Curitiba, Paraná, Brazil, <sup>11</sup> Universidade Federal de São Paulo - Department of Medicine, São Paulo, Brazil, <sup>12</sup> ACCG - Hospital Araújo Jorge - Department of Bone Marrow Transplantation, Goiânia, Goiás, Brazil, <sup>13</sup> Hospital Pequeno Príncipe - Department of Bone Marrow Transplantation, Curitiba, Paraná, Brazil, <sup>14</sup> Instituto Nacional do Câncer (INCA) - Department of Bone Marrow Transplantation, Rio de Janeiro, Brazil, <sup>15</sup> Oncobio Serviços de Saúde - Department of Bone Marrow Transplantation, Nova Lima, Minas Gerais, Brazil, <sup>16</sup> Hospital A.C.Camargo Câncer Center - Department of Bone Marrow Transplantation, São Paulo, Brazil, <sup>17</sup> Hospital de Câncer de Barretos- Department of Bone Marrow Transplantation, Barretos, São Paulo, Brazil, <sup>18</sup> Hospital de Clínicas da Universidade Federal do Paraná, Department of bone marrow transplantation in pediatrics – Curitiba, Paraná, Brazil, <sup>19</sup> Hospital das Clínicas da Universidade Federal de Minas Gerais - Department of Bone Marrow Transplantation, Belo Horizonte, Brazil, <sup>20</sup> Hospital de Base de São Jose do Rio Preto - Department of Bone Marrow Transplantation, São José do Rio Preto, São Paulo, Brazil, <sup>21</sup> Santa Casa de Misericórdia de Porto Alegre - Department of Bone Marrow Transplantation, Porto Alegre, Rio Grande do Sul, Brazil, <sup>22</sup> Centro Médico de Campinas - Department of Bone Marrow Transplantation, Campinas, São Paulo, Brazil, <sup>23</sup> Hospital Universitário Regional do Norte do Paraná - Department of Bone Marrow Transplantation, Londrina, Paraná, Brazil, <sup>24</sup> Hospital de Clínicas de Porto Alegre - Department of Bone Marrow Transplantation, Porto Alegre, Rio Grande do Sul, Brazil, <sup>25</sup> Hospital Unimed Volta Redonda - Department of Bone Marrow Transplantation, Volta Redonda, Rio de Janeiro, Brazil, <sup>26</sup> Hospital Leforte Liberdade SA - Department of Bone Marrow Transplantation, São Paulo, Brazil, <sup>27</sup> Hospital Português da Bahia - Department of Bone Marrow Transplantation, Salvador, Bahia, Brazil, <sup>28</sup> Complexo Hospitalar de Niterói - Department of Bone Marrow Transplantation, Niterói, Rio de Janeiro, Brazil, <sup>29</sup> Instituto Brasileiro de Controle do Cancer (IBCC) - Department of Bone Marrow Transplantation, São Paulo, Brazil, <sup>30</sup> Hospital São Lucas - Department of Bone Marrow Transplantation, Rio de Janeiro, Brazil, <sup>31</sup> Hospital Israelita Albert Einstein, Department of Bone Marrow Transplantation, São Paulo, Brazil, <sup>32</sup> Hospital das Clínicas da Universidade Federal do Rio Grande, Petrópolis, Rio Grande, Brazil, <sup>33</sup> Universidade Federal do Rio de Janeiro -

Department of Bone Marrow Transplantation, Rio de Janeiro, Brazil, [34](#) Instituto de Medicina Aeroespacial Brigadeiro Médico Roberto Teixeira - Department of Bone Marrow Transplantation, Rio de Janeiro, Brazil, [35](#) CEPON – Centro de Pesquisas Oncológicas - Department of Bone Marrow Transplantation, Florianópolis, Santa Catarina, Brazil, [36](#) Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo, Department of Bone Marrow Transplantation, São Paulo, Brazil, [37](#) Hospital das Clínicas da Universidade Federal do Paraná, Department of Bone Marrow Transplantation – Curitiba, Brazil, [38](#) Hospital Amaral Carvalho, Department of Bone Marrow Transplantation - Jeú, São Paulo, Brazil, [39](#) Instituto de Oncologia Pediátrica (UNIFESP) - Department of Bone Marrow Transplantation, São Paulo, Brazil, [40](#) Santa Casa de Misericórdia de Belo Horizonte - Department of Bone Marrow Transplantation, Belo Horizonte, Minas Gerais, Brazil, [41](#) Hospital Santa Cruz - Department of Bone Marrow Transplantation, São Paulo, Brazil, [42](#) Hospital Erasto Gaerther, Curitiba, Paraná, Brazil, [43](#) Hospital Luxemburgo, Belo Horizonte, Minas Gerais, Brazil, [44](#) Hospital Monte Sinai, Juiz de Fora, Minas Gerais, Brazil, [45](#) Instituto da Criança - HCFMUSP.

Correspondence to: [nutriquimio@uol.com.br](mailto:nutriquimio@uol.com.br)

## ABSTRACT

This is an observational and cross-sectional study, carried out in May 2020, targeting adult individuals of both sexes who are members of multiprofessional teams working in Brazilian HSCT units in the current period of the pandemic by completing and analyzing a questionnaire. pre-formulated. HSCT units that cannot access the questionnaire were excluded from the study. The analysis of the operation profile of HSCT units in Brazil, through the application of a pre-structured questionnaire, is not an accurate tool, since it assumes some premises that may prove to be wrong, especially in this current scenario in Brazil. However, the data reveal the vulnerability of patients with onco-hematological diseases to infection by COVID-19, especially during HSCT procedures, in relation to the general population. Despite its limitations, it can be valuable to plan policies.

**Keyboard:** SARS-CoV-2, bone marrow transplantation, protocols.

## INTRODUCTION

In December 2019, in Wuhan, China, a new betacoronavirus (initially denominated 2019-nCoV) was discovered. In January 2020, the World Health Organization (WHO) declared this outbreak as a global health emergency and named the 2019-nCoV-associated disease as 2019 coronavirus disease (COVID-19). On the same date, the Coronavirus Study Group (CSG) of the International Virus Taxonomy Committee designated the 2019-nCoV as Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2). On March 11, 2020, WHO classified the COVID-19 as pandemic due to the rapid worldwide spread of virus [1,2]. In this scenario, Hematopoietic Stem Cell Transplantation Centers (HSCT) as well as other entities of onco-hematological treatment [3,4] faced the challenge of continuing therapy and, in the case of HSCT, defining criteria for their realization. The Brazilian Society of Bone Marrow Transplantation (SBTMO) follows the recommendations of several international representative entities [5-10] preparing recommendations from SBTMO itself, aware of the need to adapt to our country, which has approximately 209 million inhabitants, continental proportions and profound regional disparities.

To evaluate the impact of the SARS-CoV-2 pandemic on HSCT and protocols adopted in Brazil.

## MATERIALS AND METHODS

This is a cross-sectional study carried out from May to June 2020, through the application of a pre-structured questionnaire of 14 questions about the possible interventions carried out in the HSCT units in the face of the COVID-19 pandemic, such as: if the service was working in the pandemic and what percentage; the use of recommendations from medical societies and which ones; the use of RT PCR for patients and donors and what are the difficulties performing the tests; COVID-19 infection in intra-transplantation and post-HSCT, which therapy was used and which were the symptoms; death due to COVID-19 in the intra or post-HSCT; contamination of health professionals; testing of contaminated healthcare workers for COVID-19; screening for COVID-19 by exams in asymptomatic employees and some comments about the HSCT procedures, patient and donor experiences. The project was approved by the Research Committee of the Walter Cantídio University

Hospital (HUWC), in Fortaleza, Brazil, following the recommendations of the national Resolution 466/12 of the National Health Council regarding ethics in research involving human beings. Before completing the questionnaire, those responsible for completing it signed a digital consent form, aiming to ensure the confidentiality, veracity, and security of the information. The questionnaire was published on the website of the Brazilian Society of Bone Marrow Transplantation (SBTMO) to be filled in by the technical health officials of the Brazilian HSCT units. Data were collected using the Google Forms application and analyzed using the Excel program.

## RESULTS

Out of a total of 86 qualified centers in Brazil, 51 centers (59.3%) responded to the questionnaire in May, which represents approximately 85% of all adult and pediatric transplants performed in Brazil. In June, 52 centers (60.4%) answered the questionnaire. In May, only 4% of the centers interrupted the HSCT program and 12.2% maintained their operation without reduction. In most of them, there was a decrease in the number of HSCT, varying from 50% to 75% of the typical number in 59.2% of all centers. In June, this variation was 79.2% (Figure 1A) All of them followed some recommendation, and the most cited was of the SBTMO both in May (98%) and in June (90.4%) (Figure 1B). The orientation for testing the donor and the asymptomatic patient in the pre-HSCT assessment was initially a reason for discussion in the country, due to the difficulty in making the exams available, but both in May (88.2%) and in June (88.5%) in most transplants and in those who do not, the collection of the RT-PCR exam is the greatest difficulty, due to the absence of a test or even an adequate place for the collection of samples (Figure 1C). The main symptoms were fever, cough, anosmia and headache (Figure 1D) and the drugs most used for treatment were azithromycin (75%), hydroxychloroquine (55%), corticosteroids and ivermectin (both 15%) (Figure 1E). Those who were using immunosuppressants, these were maintained in 38.1%, decreased in 19% and discontinued in 14.3%. About 58% of health professionals were infected and removed in May. In June, this contamination increased to 73.1% (Figure 1F). In May 88.9% of these professionals underwent a laboratory test to confirm the SARS-CoV-2 infection and in June 95% (Figure 1G). When asked about testing asymptomatic health professionals directly involved with HSCT, only 26% of centers were tested in May and 44.2% in June (Figure 1H), this measure may have decreased the viral transmission of asymptomatic workers and the chain of transmission to the patient and their relatives of these professionals.

## CONCLUSION

The analysis of the profile of the operation of HSCT units in Brazil, through the application of a pre-structured questionnaire is not an accurate tool, as it assumes some assumptions that may prove to be wrong, especially in this current scenario in Brazil. However, the data reveal the vulnerability of patients with onco-hematological diseases to infection by COVID-19, especially during the HSCT procedures, in relation to the general population. Despite its limitations, it can be valuable for planning political and health measures at the regional and federal levels.

In conclusion, most of the centers report that they are following the coping recommendations proposed by scientific societies and are reducing the number of procedures during the pandemic. The current profile in Brazilian HSCT centers, related to the recommendations for coping with COVID-19 infection, will assist in making public policy decisions in a country such as Brazil, which suffers from increasing numbers of infection and rationalizing HSCT, so that patients who have urgency in their procedures are not harmed.

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## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

## ETHICAL APPROVAL

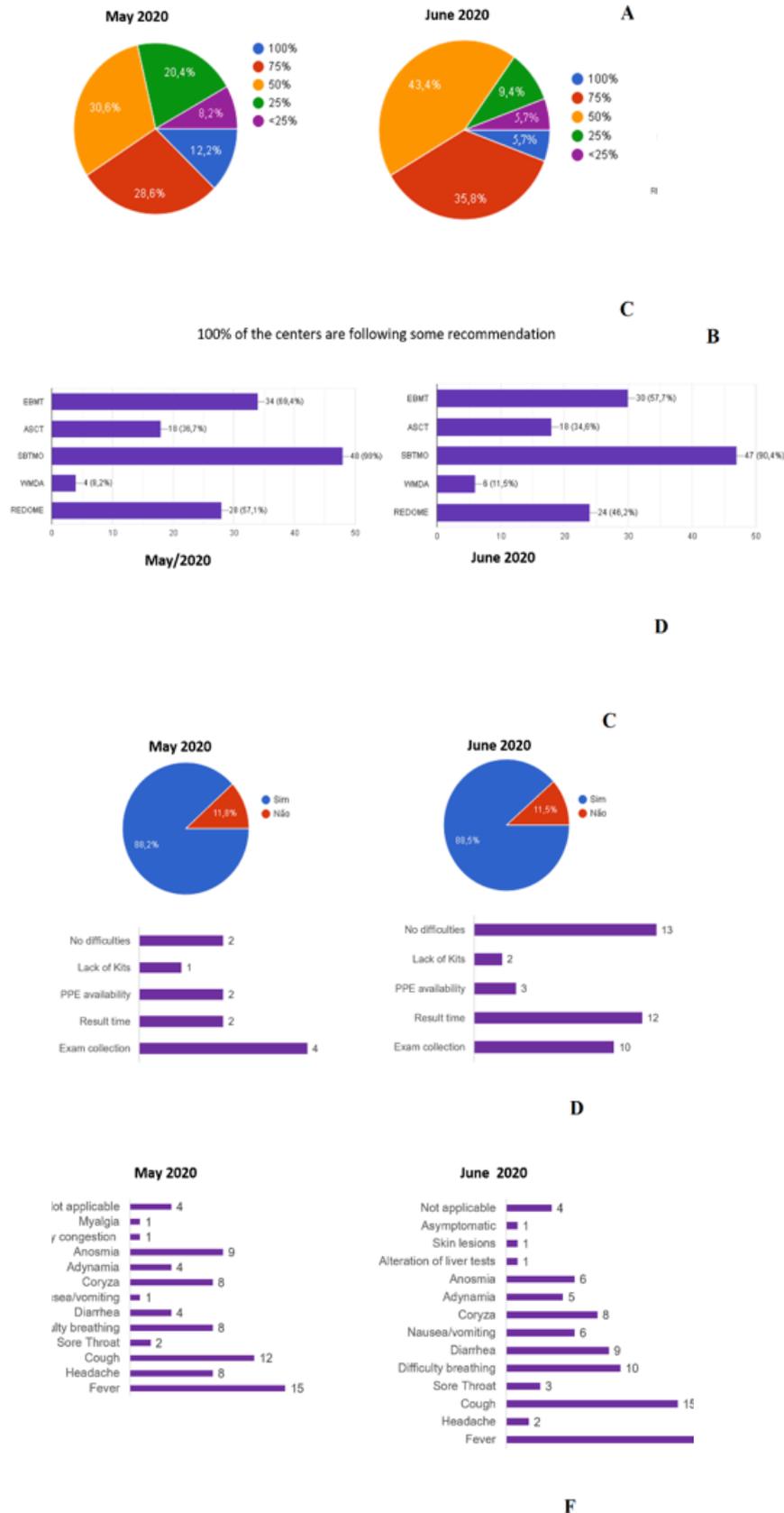
Ethical approval to report this case was obtained from Research Ethics Committee involving human beings (CEP) of the Federal University of Ceará and the Hospital Walter Cantídio (APPROVAL NUMBER: 4.079.804).

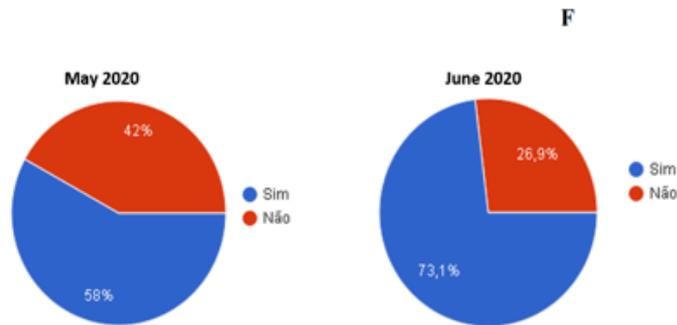
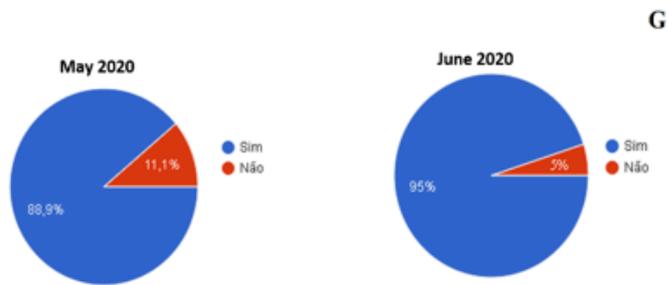
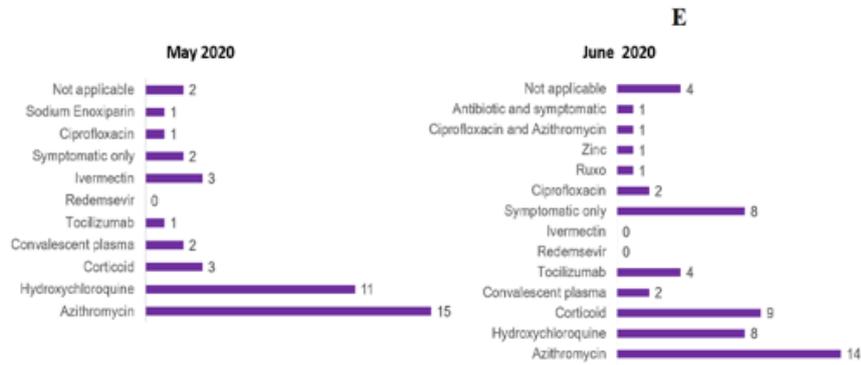
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**GRAPHIC 1** A – Operating estimate. B - Recommendation of medical societies followed by health professionals. C - Availability to perform RT-PCR for COVID-19 for patients and donors. D - Main symptoms observed in symptomatic patients for COVID-19. E - Therapy most used in cases with COVID-19 in the intra or post-BMT. F - Contamination by COVID-19 in health professionals. G - Contaminated health workers who have been laboratory tested for COVID-19. H - Death by COVID-19 in the intra or post-HSCT.





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