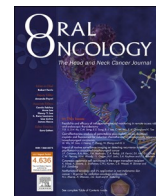




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Revaluation of the treatment of head and neck cancer in Brazil during the COVID-19 pandemic - phase 2

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Letter to the Editor,

Brazil has become the epicenter of the global COVID-19 pandemic. The country has approximately 604,000 deaths and more than 21.6 million contaminated (<https://covid.saude.gov.br/>), in addition to a slow and limited vaccination rate. In this adverse scenario, Brazil has presented damage in several health areas. There was a decrease in the number of cancer diagnoses in the country [1], and increase number of new cases herpes zoster [2] and systemic lupus [3], in addition to the impact on the treatment of head and neck cancer (HNC) [4].

Although the cancer became mandatory notification in Brazil since 2018 (<https://legis.senado.leg.br/norma/27410223>), 317 units and care centers, the National Cancer Prevention and Control Policy through the SUS (acronym in Portuguese by Health Unic System) has as attribution of comprehensive care in a regionalized and decentralized way to cancer patient (<https://www.inca.gov.br/onde-tratar-pelo-sus>). However, the COVID-19 pandemic has caused reorganized oncology services worldwide to ensure that patients continue to receive essential and care while minimizing the risk contamination [5].

Only in the Brazil, according to members of the Brazilian Society of Clinical Oncology, 74% of oncologists experienced cancer treatment cessation during the pandemic (<https://sboc.org.br/noticias/item/2099-pesquisa-sboc-74-dos-oncologistas-observaram-interruptao-do-tratamento-durante-a-pandemia>). Several limitations in the treatment of head and neck cancer were also observed by the Brazilian Society of Head and Neck Surgery (<http://sbccp.org.br/>). Preliminary research shows that people with cancer are more likely to develop COVID-19 related adverse events, such as intensive care unit (ICU) admissions requiring mechanical ventilation [6].

HNC patients are frequently elderly and have multiple comorbidities, which have been linked to an increased risk of and poor outcomes in COVID-19 patients [7]. The undesirable delays of cancer treatment and exacerbation of oral side effects can worsen the disease prognosis [8]. Thus, treatment delays in patients with malignancies may result in cancer upstaging, exerting a detrimental effect on survival and portend poor outcomes [9].

Thus, the aim of the present study was evaluated the oncological

treatment of HNC in Brazil the year in 2020 compared to 2019 (from the August to December), in addition to conducting a survey of all papers published in PubMed (<https://pubmed.ncbi.nlm.nih.gov/>) during this period, comparing general HNC treatment data from the pandemic period to earlier times.

For this, the data of the public archives of the Hospital Information System of the Brazil's Unified Health System (SIH/SUS) and Outpatient Information System (SUS-SAI/SUS) from Department of Informatics of the SUS (<http://www2.datasus.gov.br>). Through the PubMed database, a survey was carried out to show the treatment of HNC before and during the pandemic. The research descriptors used were "CANCER," "COVID-19," "IMPACT," AND "TREATMENT". To determine the final sample of papers, two assessed examiners, the initial list of publications and applied inclusion criteria. After reviewing the whole content of these, just 4 papers remained [4,10–12]. All selected papers demonstrated a substantial decrease in HNC surgery numbers when compared to the pre-pandemic period (Supplementary Table 1).

In 2019, from August to December, the number of surgeries for HNC was 5,573. In 2020, during the same period, there were 4,965 surgeries, representing a 10.9% decrease during the pandemic period. The greatest decrease was observed in the South region (24.3%). In the other regions, the decrease ranged from 21.6% to 0.5%. Table 1 shows the detailed data. Concomitantly, the number of radiotherapy and chemotherapy procedures increased when comparing the pre- and pandemic periods. In 2019 from the August to December, the number of radiotherapy and chemotherapy procedures was 14,978. In 2020, during the same period, there were 15,906 procedures, representing a 6.2% increase during the pandemic period. The highest increase was observed in the Midwest region (28.2%). In the remain regions, the increase ranged from 9.2% to 0.2% (Table 2).

Cancer patients have a 3.5 times greater risk of needing ICU beds, mechanical ventilation and death [13]. For any stage the surgical resection is the main treatment for HNC, ensuring significant improvement in patient survival but due to the pandemic in many places, the operating room capacity has been curtailed [4,14]. Making chemotherapy and radiotherapy services have their most sought after services, however both have adverse reactions [15,16].

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Table 1

Difference between the mean number of head and neck oncological surgeries in the pre- and during the COVID-19 pandemic according to Brazilian geographic regions.

Regions of Brazil	Aug – Dec 2019 (n)	Aug – Dec 2020 (n)	Difference Aug – Dec	Aug – Dec %
North	182	166	–16	–8.8
Northeast	1490	1483	–7	–0.5
Southeast	2257	2059	–198	–8.8
South	1172	887	–285	–24.3
Midwest	472	370	–102	–21.6
Total	5573	4965	–608	–10.9

Table 2

Difference between the mean number of head and neck chemotherapy and radiotherapy in the pre- and during the COVID-19 pandemic according to Brazilian geographic regions.

Regions of Brazil	Aug – Dec 2019 (n)	Aug – Dec 2020 (n)	Aug – Dec Difference	Aug – Dec %
North	561	568	+7	+1.2
Northeast	3351	3667	+316	+9.4
Southeast	7253	7645	+392	+5.4
South	3079	3085	+6	+0.2
Midwest	734	941	+207	+28.2
Total	14,978	15,906	+928	+6.2

The COVID-19 pandemic necessitates a temporary shift in current HNC treatment paradigms, favoring radiation and chemotherapy over surgery and adjuvant therapy.

Provoking a considerable decrease in the number of surgeries in the pandemic period in relation to the pre-pandemic period and causing an increase in radiation and chemotherapy. However, some adverse effects may appear after radiotherapy treatment such as hyposalivation, xerostomia, dysphagia, radiation caries, trismus and osteoradionecrosis among others.

Authors' contributions

A.J. Martelli and R.A. Machado contributed to conception design, data acquisition and interpretation, drafted and critically revised the manuscript. W.M. Pereira, F.B.G. Santos, N.P. Marques and H. Martelli-Júnior contributed to conception, design, data acquisition and interpretation and critically revised the manuscript. All authors gave their final approval and agree to be accountable for all aspects of the work.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.oraloncology.2021.105600>.

References

- [1] Marques NP, Silveira DMM, Marques NCT, Martelli DRB, Oliveira EA, Martelli-Júnior H. Cancer diagnosis in Brazil in the COVID-19 era. *Semin Oncol*. 2021; S0093-7754(20):30123-8.
- [2] Maia CMF, Marques NP, de Lucena EHG, de Rezende LF, Martelli DRB, Martelli-Júnior H. Increased number of Herpes Zoster cases in Brazil related to the COVID-19 pandemic. *Int J Infect Dis*. 2021;104:732-3.
- [3] Martelli Júnior H, Marques NP, Marques NCT, Gomes de Lucena E, Martelli DRB, Oliveira EA. Correspondence on 'Clinical course of coronavirus disease 2019 (COVID-19) in a series of 17 patients with systemic lupus erythematosus under long-term treatment with hydroxychloroquine'. *Ann Rheum Dis*. 2021:220410.
- [4] Martelli AJ, Machado RA, Pereira WM, Silveira DMM, da Cruz Perez DE, Martelli Júnior H. Impact of the COVID-19 pandemic in the head and neck cancer treatment in the Brazil. *Oral Oncol*. 2021;18: 105148.
- [5] Ciotti M, Angeletti S, Minieri M, Giovannetti M, Benvenuto D, Pascarella S, et al. COVID-19 Outbreak: An Overview. *Chemotherapy*. 2020;64(5-6):215-23.
- [6] MD Anderson Head and Neck Surgery Treatment Guidelines Consortium; Consortium members, Maniakas A, Jozaghi Y, Zafereo ME, Sturgis EM, Su SY, Gillenwater AM, Gidley PW, et al. Head and neck surgical oncology in the time of a pandemic: Subsite-specific triage guidelines during the COVID-19 pandemic. *Head Neck*. 2020;42(6): 1194-1201.
- [7] Day AT, Sher DJ, Lee RC, Truelson JM, Myers LL, Sumer BD, et al. Head and neck oncology during the COVID-19 pandemic: Reconsidering traditional treatment paradigms in light of new surgical and other multilevel risks. *Oral Oncol*. 2020; 105:104684. <https://doi.org/10.1016/j.oraloncology.2020.104684>.
- [8] Alves FA, Saunders D, Sandhu S, Xu Y, Mendonça NF, Treister NS. Implication of COVID-19 in oral oncology practices in Brazil, Canada, and the United States. *Oral Dis*. 2021;27(S3):793-5.
- [9] Liao C-T, Chen H-N, Wen Y-W, Lee SR, Ng S-H, Liu T-W, et al. Association between the diagnosis-to-treatment interval and overall survival in Taiwanese patients with oral cavity squamous cell carcinoma. *Eur J Cancer*. 2017;72:226-34.
- [10] Kiong KL, Guo T, Yao CMKL, Gross ND, Hanasono MM, Ferrarotto R, et al. Changing practice patterns in head and neck oncologic surgery in the early COVID-19 era. *Head Neck*. 2020;42(6):1179-86.
- [11] De Luca P, Bisogno A, Colacurcio V, Marra P, Cassandro C, Camaioni A, et al. Diagnosis and treatment delay of head and neck cancers during COVID-19 era in a tertiary care academic hospital: what should we expect? *Eur Arch Otorhinolaryngol*. 2021;30:1-5.
- [12] Medas F, Ansaldo GL, Avenia N, Basili G, Bononi M, Bove A, et al; Italian Society of Endocrine Surgery (SIUEC) Collaborative Group. Impact of the COVID-19 pandemic on surgery for thyroid cancer in Italy: nationwide retrospective study. *Breast J Surg*. 2021; 108(4): e166-e167.
- [13] González-Montero J, Valenzuela G, Ahumada M, Barajas O, Villanueva L. Management of cancer patients during COVID-19 pandemic at developing countries. *World J Clin Cases*. 2020;8(16):3390-404.
- [14] Thomson DJ, Palma D, Guckenberger M, Balermppas P, Beitler JJ, Blanchard P, et al. Practice Recommendations for Risk-Adapted Head and Neck Cancer Radiation Therapy During the COVID-19 Pandemic: An ASTRO-ESTRO Consensus Statement. *Int J Radiat Oncol Biol Phys*. 2020;107(4):618-27.
- [15] Mehanna H, Gillison M, Lee AWM, von Zeidler SV, Porceddu S. Head and Neck International Group (HNCIG). Adapting Head and Neck Cancer Management in the Time of COVID-19. *Int J Radiat Oncol Biol Phys*. 2020;107(4):628-30.
- [16] Han AY, Miller JE, Long JL, St John MA. Time for a Paradigm Shift in Head and Neck Cancer Management During the COVID-19 Pandemic. *Otolaryngol Head Neck Surg*. 2020;163(3):447-54.

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