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A study of lymph node involvement in breast carcinoma during the covid pandemic

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ABSTRACT

Background. During the COVID-19 pandemic, access to health care and early detection / treatment of cancers were severely affected. This is a pathological study comparing the involvement of lymph nodes in breast carcinomas before the onset and during the current pandemic. *Methods*. A retrospective study was conducted on 30 patients with breast carcinomas (15 from January to March of 2019, and 15 from January to March of 2021), who were treated both by surgical excision of the tumor and by resection of the lymph nodes. Histopathological examination of the nodes was performed to detect malignant metastasis, and the average rate of lymph node positivity was calculated. *Results*. Lymph node metastasis was observed in 8 patients in 2019 and 10 patients in 2021. The average node positivity rate was significantly higher in 2021 than in 2019. During the covid-19 pandemic, there was a significant delay in the presentation of patients who developed symptoms of malignancy to the physician. This led to a delay in diagnosis and thus to the treatment of advanced malignancies, which caused metastases in the regional lymph nodes. *Conclusion*. Patient awareness should therefore be improved to ensure early presentation and reporting of symptoms. Surgeons must also carefully explore the dissecting field, to ensure that all lymph nodes involved are resected, thus avoiding recurrence and improving the overall patient's prognosis.

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Introduction

The development of coronavirus disease 2019 (COVID-19), manifested as severe acute respiratory disease coronavirus 2 (SARS-CoV-2), has had major global public health consequences, impacting the health systems of all medical specialties. After the World Health Organization (WHO) declared COVID-19 a public health emergency on March 11, 2020, many nations have stepped up their efforts to stop the spread of the virus and to treat patients with COVID-19 [1-3]. The pandemic has had a significant impact on the health system, as many other diseases that require attention have been overlooked due to the reallocation of resources and the restoration of priorities. Cancers are among the diseases that have failed to get proper treatment, with significant consequences [4,5].

Locoregional LNs are the earliest and most common sites of solid tumor metastasis, such as breast carcinoma [6,7]. As tumors grow and evolve, they lead to metastases in the regional lymph nodes. The involvement of the lymph nodes is of particular prognostic importance in cancer in general, including breast cancer. Persistent lymph node disease may be the source of subsequent fatal metastases if not completely resected, while improved local therapy is associated with a better prognosis [8-10].

Materials and Methods

This is a retrospective study conducted between January-March 2019 and 2021 in patients who underwent surgery for breast carcinomas in the general surgery department of Meenakshi Medical College and Hospital, Chennai. A total of 30 patients were included in this study, of which 15 cases were registered before the covid-19 pandemic in 2019, and 15 cases during the covid-19 pandemic in 2021. Radical resection of the tumor was performed along with dissection of the lymph nodes. Resected lymph nodes were sent for histopathological examination and the average positivity rate of the lymph nodes was calculated. The study was conducted in accordance with the guidelines and approval of the

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Institutional Ethics Committee. Informed consent was obtained from each patient. Odds ratio was used to measure the association between pre covid era [PCE] and covid era [CE]. The p value < 0.05 was considered statistically significant. All statistical analyzes were performed using SPSS software, version 21.

Results

A total of 30 breast cancer patients were operated on in our department during the time this study was designed; 15 in the COVID period and 15 in the pre-COVID period. A tabulation of the type of cancer in our study is presented in Table 1 and Figure 1.

Table 1. Type of cancer [n =30]

	2019	2021
CA BREAST	15	15

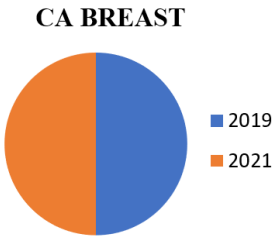

Figure 1. Type of cancer [n =30] (2019 - 15 patients, 2021 - 15 patients)

The probability of lymph node involvement among cancer patients in 2019 and 2021 is presented in Table 2. Figure 2 shows the prevalence of lymph node positivity in cancer patients in 2019 and 2021, respectively.

Table 2. Association of the risk of lymph node involvement between PCE and EC

	2019 node positivity N=15	2021 node positivity N=15	Odds ratio 95% confidence interval	P value
Breast cancer	8	10	1.25 (0.38-4.04)	0.70

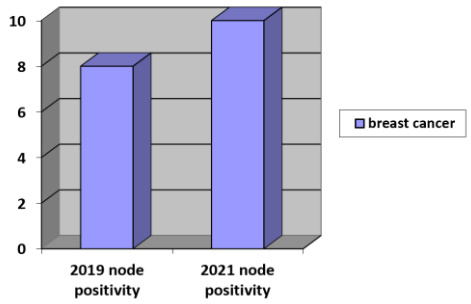

Figure 2. The average node positivity rate in the precovid era compared to the covid era.

Table 3 and Figure 3 depict the average lymph node positivity rate for breast cancer in PCE and CE.

Table 3. The average lymph node positivity rate for breast cancer.

Type of cancer	Average node positivity rate in PCE in 2019	Average node positivity rate in CE in 2021
CA breast	53.33	66.66

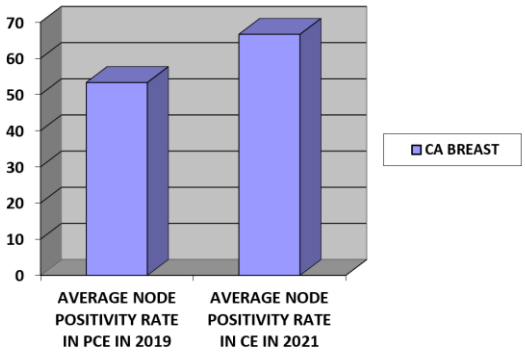

Figure 3. The average lymph node positivity rate for breast cancer.

Discussion

The outbreak of COVID-19 has generated major health, scientific, economic and social challenges globally. In the initial period, they ranged from the lack of personal protective equipment and testing kits for covid positive patients, to the lack of clear guidelines and protocols for the management of non-COVID patients during the pandemic. This required a thorough case-by-case analysis and risk assessment, along with re-prioritization of waiting lists for non-covid patients [11-13].

Early experience in China suggested that the COVID-19 pandemic clearly influenced the care of patients in need of cancer surgery, being much more affected than patients in need of emergency surgery [14,15]. Using the prioritization of the newly designed list and the careful selection of patients, we were able to increase the number of cancer resections almost the same compared to the same time frame a year ago.

The presence of metastases in the regional lymph nodes is important because it determines the treatment protocol and the general prognosis of the patient [16,17]. Unfortunately, during the covid-19 pandemic, there was a delay in the outpatient presentation of patients with undiagnosed malignancies. This delay can be attributed to several factors, some of which are the reprioritization that has been applied, travel restrictions, medical and social logistical constraints, and so on. Due to these delays, when cancer patients underwent tumor resection surgery along

with removal of the regional lymph nodes, significant lymph node metastases were already present.

Breast cancer

The average node positivity rate in the CE (66.6%) is higher than in the PCE (53.33%). In our experience, no major differences were observed in the management of breast cancer patients compared to the pre-COVID era. This has been a concern in our team, and our results show that there has been no compromise in providing standards of care to other cancer patients compared to the pre-COVID era.

Patient survival rate increased moderately as lymph node involvement decreased, regardless of primary tumor size. The condition of the lymph nodes serves as an indicator of the tumor's ability to spread locally and at a distance [18-20]. Patients with four or more lymph nodes involved at the time of initial diagnosis had a significantly worse outcome in terms of relapse than patients without lymph node involvement. Lymph node metastasis may also be associated with a marker of a more aggressive malignant phenotype [21,22].

Therefore, our study suggests that surgeons need to be careful and fully explore the dissection field, to ensure that all tumor lymph nodes invaded by the tumor are resected during surgery, thus avoiding recurrences and improving the patient's overall prognosis during postoperative period.

Conclusions

During the covid-19 pandemic there was a considerable reduction in the number of patients who presented for symptoms of malignancy, thus delaying the diagnosis and treatment to be performed in cancer patients. This has led to a diagnosis and treatment of patients with malignancy generally in advanced stages of evolution, which caused metastases to regional lymph nodes that were resected along with the primary tumor during surgery. Therefore, medical awareness and education of patients should be improved to ensure the early presentation and reporting of symptoms in cases of malignancy. Surgeons must remain vigilant and fully explore the dissecting field. Thus, the surgeon must ensure that all tumor-invaded lymph nodes are resected during surgery to avoid recurrence and to improve the overall prognosis of the cancer patient.

Conflict of interest disclosure

There are no known conflicts of interest in the publication of this article. The manuscript was read and approved by all authors.

Compliance with ethical standards

Any aspect of the work covered in this manuscript has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

References

1. Mathelin C, Ame S, Anyanwu S, Avisar E, Boubnider WM, Breitling K, Anie HA, Conceição JC, Dupont V, Elder E, Elfgen C, Elonge T, Iglesias E, Imoto S, Ioannidou-Mouzaka L, Kappos EA, Kaufmann M, Knauer M, Luzuy F, Margaritoni M, Mbodj M, Mundinger A, Orda R, Ostapenko V, Özbaş S, Özmen V, Pagani O, Pieńkowski T, Schneebaum S, Shmalts E, Selim A, Pavel Z, Lodi M, Maghales-Costa M. Breast Cancer Management During the COVID-19 Pandemic: The Senologic International Society Survey. *Eur J Breast Health*. 2021 Mar 31;17(2):188-196. doi: 10.4274/ejbh.galenos.2021.2021-1-4
2. Wang W, Guo B, Cui C, Sun T, Liu S. Management of early-stage breast cancer patients during the coronavirus disease 2019 (COVID-19) pandemic: The experience in China from a surgical standpoint. *J Cancer*. 2021;12(8): 2190-2198. doi: 10.7150/jca.50501
3. Casella D, Fusario D, Cassetti D, Miccoli S, Pesce AL, Bernini A, Marcasciano M, Lo Torto F, Neri A. The patient's pathway for breast cancer in the COVID-19 era: An Italian single-center experience. *Breast J*. 2020 Aug;26(8):1589-1592. doi: 10.1111/tbj.13958
4. Akula SM, Abrams SL, Steelman LS, Candido S, Libra M, Lerpiriyapong K, Cocco L, Ramazzotti G, Ratti S, Follo MY, Martelli AM, Blalock WL, Piazzi M, Montalto G, Cervello M, Notarbartolo M, Basecke J, McCubrey JA. Cancer therapy and treatments during COVID-19 era. *Adv Biol Regul*. 2020 Aug;77:100739. doi: 10.1016/j.jbior.2020.100739
5. Al-Shamsi HO, Alhazzani W, Alhuraiji A, Coomes EA, Chemaly RF, Almuhanna M, Wolff RA, Ibrahim NK, Chua MLK, Hotte SJ, Meyers BM, Elfiki T, Curigliano G, Eng C, Grothey A, Xie C. A Practical Approach to the Management of Cancer Patients During the Novel Coronavirus Disease 2019 (COVID-19) Pandemic: An International Collaborative Group. *Oncologist*. 2020 Jun;25(6):e936-e945. doi: 10.1634/theoncologist.2020-0213
6. Punglia RS, Morrow M, Winer EP, Harris JR. Local therapy and survival in breast cancer. *N Engl J Med*. 2007;356(23):2399-405. doi: 10.1056/NEJMra065241
7. de Bock E, Trumpi K, Suijkerbuijk KPM, Vriens MR, Richir MC. Diagnostic pitfalls after COVID-19 vaccination in melanoma and breast cancer patients: A case series. *Int J Surg Case Rep*. 2022 Apr;93:106938. doi: 10.1016/j.ijscr.2022.106938
8. Kawada K, Taketo MM. Significance and mechanism of lymph node metastasis in cancer progression. *Cancer Res*. 2011 Feb 15;71(4):1214-8. doi: 10.1158/0008-5472.CAN-10-3277

9. Lazar AL, Vulturar R, Fodor A, et al. The molecular mechanisms linking metabolic syndrome to endometrial and breast cancers. *J Mind Med Sci*. 2021; 8(2):167-178. doi: 10.22543/7674.82.P167178
10. İlgün AS, Özmen V. The Impact of the COVID-19 Pandemic on Breast Cancer Patients. *Eur J Breast Health*. 2021;18(1):85-90. doi: 10.4274/ejbh.galenos.2021.2021-11-5
11. COVIDSurg Collaborative. Global guidance for surgical care during the COVID-19 pandemic. *Br J Surg*. 2020;107(9):1097-1103. doi: 10.1002/bjs.11646
12. Allali S, Servois V, Beddok A, Fourquet A, Kirova Y. Evaluation of the early adverse effects of radiotherapy in breast cancer patients with COVID-19: Prospective single institutional study. *Breast J*. 2021 Nov;27(11): 824-827. doi: 10.1111/tbj.14282
13. Keskin A, Karslioglu B. Did Covid-19 pandemic narrow the spectrum of surgical indications? *J Clin Investig Surg*. 2021;6(1):58-63. doi: 10.25083/2559.5555/6.1.11
14. Shi J, Sznajder KK, Liu S, Xie X, Yang X, Zheng Z. Resilience and Posttraumatic Growth of Patients With Breast Cancer During the COVID-19 Pandemic in China: The Mediating Effect of Recovery. *Front Psychol*. 2022 Jan 20;12:811078. doi: 10.3389/fpsyg.2021.811078
15. Chen R, Yang J, Zhao X, Fu Z, Wang Z, Qiu C, Wu Y, Yang R, Liu W, Huang Y, Chen J. Pattern of Time-to-Surgery in Patients With Breast Cancer at Different Stages of the COVID-19 Pandemic. *Front Oncol*. 2022 Jan 12;11:820638. doi: 10.3389/fonc.2021.820638
16. Foster RS Jr. The biologic and clinical significance of lymphatic metastases in breast cancer. *Surg Oncol Clin N Am*. 1996 Jan;5(1):79-104.
17. Jatoi I, Hilsenbeck SG, Clark GM, Osborne CK. Significance of axillary lymph node metastasis in primary breast cancer. *J Clin Oncol*. 1999 Aug; 17(8): 2334-40. doi: 10.1200/JCO.1999.17.8.2334
18. van Oers H, Schlebusch L. Indicators of psychological distress and body image disorders in female patients with breast cancer. *J Mind Med Sci*. 2020;7(2):179-187. doi: 10.22543/7674.72.P179187
19. Popescu B, Oașă ID, Bertesteanu SV, Balalau C, Scaunasu R, et al. Emergency tracheostomy protocols in Coltea Clinical Hospital in patients with SARS-CoV-2 infection. *J Clin Investig Surg*. 2020;5(1):34-38. doi: 10.25083/2559.5555/5.1/34.38
20. Cubbison A, Wang LC, Friedewald S, Schacht D, Gupta D, Bhole S. A multidisciplinary approach to axillary lymph node staging with ultrasound in the setting of a highly suggestive or suspicious breast mass. *Clin Imaging*. 2022 Apr 26;87:56-60. doi: 10.1016/j.clinimag.2022.04.011
21. Carter CL, Allen C, Henson DE. Relation of tumor size, lymph node status, and survival in 24,740 breast cancer cases. *Cancer*. 1989 Jan 1;63(1):181-7. doi: 10.1002/1097-0142(19890101)63:1<181::aid-cncr2820630129>3.0.co;2-h
22. Alcaide SM, Diana CAF, Herrero JC, Vegue LB, Perez AV, Arce ES, Sapiña JBB, Noguera PJG, Caravajal JMG. Can axillary lymphadenectomy be avoided in breast cancer with positive sentinel lymph node biopsy? Predictors of non-sentinel lymph node metastasis. *Arch Gynecol Obstet*. 2022 May 3. doi: 10.1007/s00404-022-06556-7