

INTRODUCTION

Standard treatment approaches for breast cancer faced unprecedented challenges during the COVID-19 pandemic. Among other changes, treatment approaches shifted because of staff shortages, supply chain demands, and hospital shutdowns. These consequences of the pandemic are thought to have impacted routine screening for breast cancer patients, as well as the treatment for breast cancer patients. Physicians were tasked with balancing optimal patient care with minimizing COVID-19 infection in breast cancer patients.

The aim of our study was to identify the impact of the COVID-19 pandemic on both the medical and surgical treatment of breast cancer patients, and we hoped to offer insights into treatment strategy for breast cancer patients both during the pandemic and for the future.

METHODS

Utilizing the National Cancer Database (NCDB), a retrospective population-based study of breast cancer patients (Stages Tis – III) prior to the COVID-19 pandemic (2018, 2019) and during the COVID-19 pandemic (2020) was performed. Demographics, tumor characteristics, and treatment data were analyzed to identify differences in definitive or earliest treatment types between the pre-COVID-19 and active COVID-19 periods. Patients with Stage IV disease were excluded from analysis. Frequency analysis and logistic regression was used to analyze differences between the two time periods with $p < 0.05$ used for statistical significance.

RESULTS

687,431 patients that were included in this study 477,659 from the pre-pandemic period 209,772 from the active pandemic period.

While race, insurance status, education, and tumor characteristic differences were statistically significant, the effect sizes for all were small (**Table 1**).

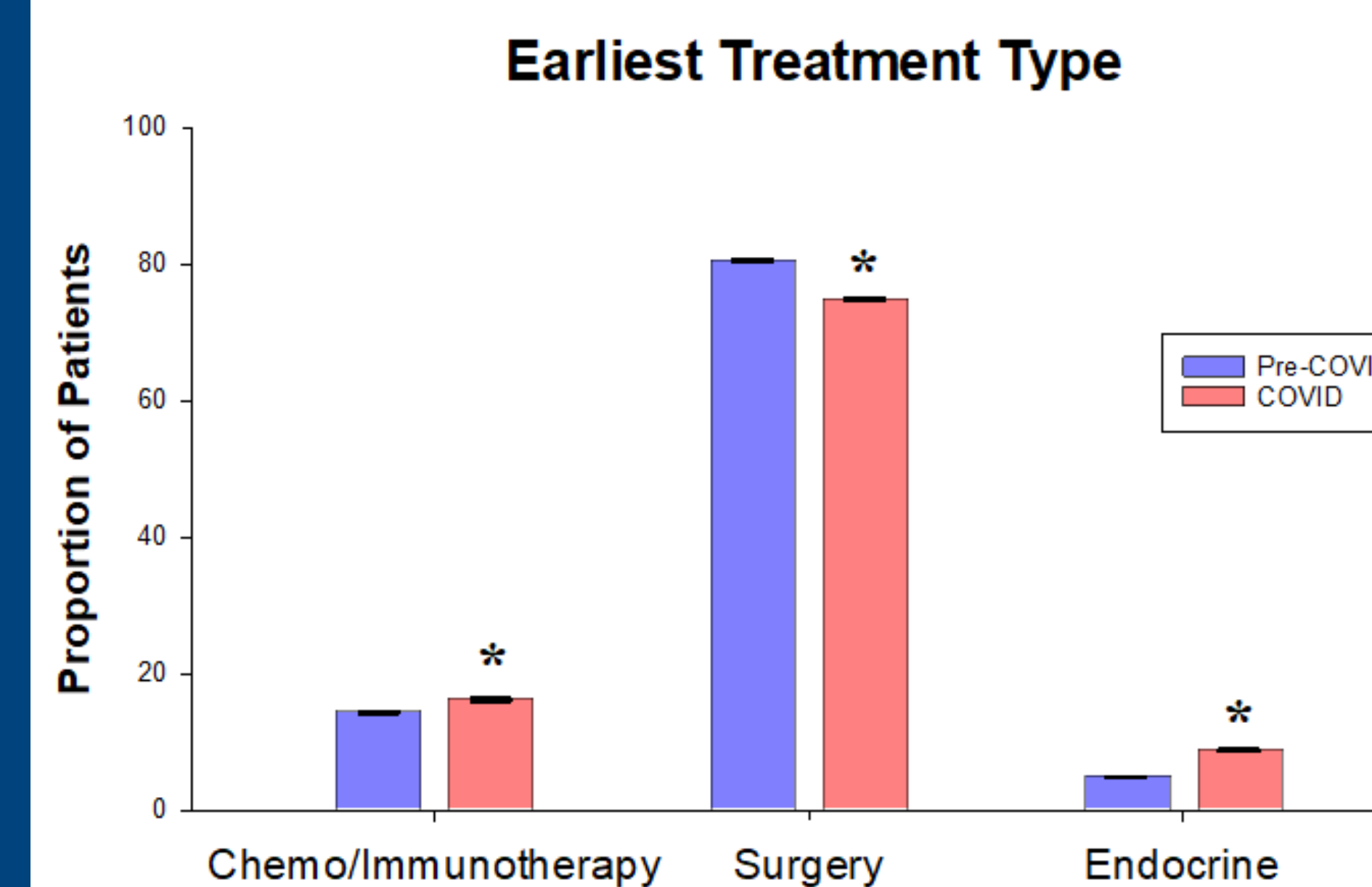
Table 1: Tumor characteristics

	Pre-COVID	COVID	p-value	Effect Size
Clinical Staging (%)				
0	18.8	18.3	<0.001	0.0118
1	69.0	68.8		Very small
2	7.0	7.5		small
3	5.2	5.4		
Pathological Staging (%)				
0	17.3	16.6	<0.001	0.0121
1	51.8	52.9		Very small
2	26.3	26.2		small
3	4.6	4.3		
Tumor Size (mm, Median, IQR)	15 (16)	15 (17)	<0.001	0.0187 Very small

Frequency of surgical intervention as the earliest treatment decreased from 80.5% pre-pandemic to 74.7% during the pandemic ($p < 0.001$). Endocrine therapy as the earliest treatment increased in frequency from 4.93% pre-pandemic to 8.81% during the pandemic. Chemotherapy/immunotherapy as the earliest treatment also increased in frequency from 14.35% to 16.22% during the pandemic ($p < 0.001$) (**Figure 1**).

RESULTS

Figure 1: Graph of earliest treatment type before and during the COVID-19 pandemic.



It was found that surgery was being offered **4 days later** during the pandemic, while endocrine therapy was being initiated **14 days sooner** and chemotherapy/immunotherapy was being initiated **7 days sooner** during the pandemic (**Table 2**).

Table 2: Time to treatment

Treatment Modality	Pre-COVID Time to Treatment	COVID Time to Treatment	p
Surgery (days, N)	71 ± 64	75 ± 67*	<0.001
Endocrine (days, N)	149 ± 96	135 ± 92*	<0.001
Chemo / Immuno (days, N)	74 ± 60	67 ± 56*	<0.001

DISCUSSION

This data shows that there was a decrease in the frequency of the use of surgical interventions as the first treatment for breast cancer during the pandemic. Alternatively, there was an increase in the frequency of the use of systemic therapy. Similarly, the time to treatment with systemic therapies decreased during the pandemic, while the time to treatment with surgical interventions increased. These changes are likely a reflection of the hospital's adaption to the pandemic in an attempt to minimize exposure to COVID-19. These data highlight physician's capability to adapt quickly and their willingness to change treatment paradigms during a crisis. Future studies will need to evaluate whether this shift toward systemic therapy first was temporary or if a lasting trend will persist, as well as the impact this shift had on patient outcomes. Finally, despite the national threat of the COVID-19 pandemic, patients were still able to receive necessary evidence-based treatment.

Limitations

This was a retrospective study using publicly available data and thus is subject to discrepancies in data collection. Because of the NCDB structure, this dataset was limited to the 2020 time period for the COVID-19 pandemic.

DISCLOSURE

The presenting author has no relationships to disclose.