



THE EFFECT OF COVID-19 PANDEMIC ON THE MANAGEMENT OF MUSCULOSKELETAL TUMOURS, AN OBSERVATIONAL STUDY.

Orthopaedics

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ABSTRACT

Background/Purpose: COVID-19 pandemic has affected all spheres of life. The treatment of non-covid patients has been severely affected in these times. The pandemic has led to delay in healthcare delivery to many vulnerable groups specially cancer patients. Limited resources for non-covid patients might lead to delay in diagnosis and treatment in musculoskeletal tumour patients. Furthermore, nationwide lockdowns have led to travel restrictions and hence inability of patients to reach healthcare facilities. **Method:** A retrospective analysis of institutional records of musculoskeletal tumour patients (both primary and secondary) was performed for two consecutive years (2019-2020 and 2020-2021). Mean time duration from presentation to final surgery was calculated for the two groups and this was compared using unpaired t-test. **Results:** The mean duration from presentation to final surgery was 10.03+9.48 days in pre- COVID times (n=30) and 11.75+7.92 days in COVID times (n=33). Predominantly younger patients with primary tumours presented during COVID times as compared to pre-COVID times where more of secondary tumours presented. **Conclusion:** The delay in time from presentation to final surgery was not statistically significant and the way forward suggests a shift of healthcare to virtual platforms.

KEYWORDS

Musculoskeletal tumours, COVID-19 pandemic

INTRODUCTION

COVID-19 is an infectious viral illness which was declared a public health emergency of international concern on March 11, 2020⁽¹⁾ (Listings of WHO's Response to COVID-19, n.d.). The pandemic has affected all spheres of life. The outbreak has placed exceptional stress on the already overburdened healthcare systems worldwide to continue essential services while preventing hospital spread of infection (Rajasekaran et al., 2021).

COVID-19 pandemic has affected healthcare delivery to many vulnerable population groups especially cancer patients. Cancer care involves frequent hospital visits both for diagnosis and treatment, involving different clinical specialities. Therefore, a cancer patient has to visit the hospital more frequently compared to other patients (Shankar et al., 2020). Musculoskeletal tumours are neoplasms that can cause significant morbidity and mortality. Urgent care should be provided to these patients with an interdisciplinary approach. Delay in treatment may have life threatening consequences on the prognosis of these patients.

In developing countries like India, cancer care involves transfer of patient from remote areas to bigger cities where better healthcare facilities are available (Shankar et al., 2020). However, during the pandemic, there has been paucity of movement due to nationwide lockdowns and travel restrictions. Even when the patient reaches tertiary level healthcare facility there are delays in diagnosis and treatment due to covid related institutional protocols such as mandatory covid test for radiological investigations and admission, daily limit to the number of patients visiting the outpatient facilities, and scarcity of intensive care units for non-covid patients. If a tumour patient turns out covid positive, it leads to inadvertent delay in the treatment. All these delays together compromise cancer care of the patient as a whole leading to worsening of prognosis and increased morbidity. Cancer care costs involving multiple hospital visits for diagnosis and treatment are significant, which become unapproachable to the weaker sections of the society owing to rising unemployment from nationwide lockdowns.

We thus planned to review the demography of musculoskeletal tumours in our hospital during these covid times and compare the musculoskeletal tumour management in covid and pre-covid times.

MATERIALS AND METHODS

A retrospective analysis of data from institutional records of musculoskeletal tumour patients was done for two consecutive years (2019-2020 and 2020-2021). Healthcare data of individual patient of musculoskeletal tumours was collected from the time of presentation to completion of the treatment. The data from the two years (pre-covid and covid times) was compared for demography, presentation, time lapse between diagnosis and management and outcome of the cases.

All the cases presenting with primary as well as secondary musculoskeletal tumours were included in the study. The average delay in presentation to surgery was noted and compared between the two groups.

All data was analysed using SPSS 22.0 software. Mean time duration from presentation to final surgery was calculated for the two groups and this was compared using t-test. Chi square test was used to compare the frequencies between two groups.

RESULT

In our study, during the pre-covid times 33 patients of primary and secondary musculoskeletal tumours were admitted in our institution, out of which 8 (24.24%) were primary musculoskeletal tumours and rest 25 (75.76%) were secondary tumours. Out of these 33 patients, three were lost to follow-up and rest 30 were evaluated. The mean duration from presentation to final surgery in these 30 cases was 10.03±9.48 days.

During the covid times, 40 patients of primary and secondary musculoskeletal tumours were admitted in our institution, out of which 29 (72.5%) were primary musculoskeletal tumours and rest 11 (27.5%) were secondary tumours. Out of these 40 patients, 7 were lost to follow up and data of rest 33 patients was evaluated. The mean duration from presentation to final surgery in these 33 cases was 11.75±7.92 days.

The comparison of demographic data of the patients is presented in table 1.

Table 1. The comparison of demographic data of musculoskeletal tumour patients in Pre-covid and Covid times.

Parameter	Pre-covid	Covid
Gender		
Males	21 (64%)	31 (77.5%)
Females	12 (36%)	9 (22.5%)
Age <20; 20-50; >50	11; 9; 13	18; 18; 4
Mean	36±21 years	28±15 years
Primary Tumours	8 (24%)	29 (72.5%)
a) Benign	2	7
b) Malignant	6	22
Secondary Tumours	22 (76%)	11 (27.5%)

On analysis, we observed that presentation with primary musculoskeletal tumours during the covid times was significantly more as compared to the pre-covid times ($p=0.00037$). No difference was seen between the two groups in terms of age ($p=0.52$) or gender ($p=0.19$).

The mean duration from presentation to final surgery was compared between the two groups and no statistically significant difference was found between the two groups ($p=0.435$).

During the pre-covid times, out of 33 patients 3 were lost to follow-up after the initial work-up and biopsy. Out of these 3 cases, one was 60 years male with CA lung with metastasis to right shaft humerus with pathological fracture, while the other two were primary bone tumours (10 years male with distal femur osteosarcoma and 12 years male with proximal tibia Ewing's sarcoma). However, in the covid times, out of a total of 40 patients, seven were lost to follow-up, out of which 4 were osteosarcoma, one chondrosarcoma, one Giant cell tumour and another one was osteofibrous dysplasia. Though more patients were lost to follow-up during the covid pandemic period, the difference was not statistically significant.

DISCUSSION

COVID-19 has had significant impact on the healthcare system. There has been a drastic change in care of the cancer patients during COVID-19 pandemic. Tertiary care centres are facing problems in cancer care delivery due to reduced manpower owing to shifting of services in management of covid patients (Shankar et al., 2021). Post covid lockdowns have impacted patient access to in-person care and, in turn, have resulted in reduced access and delay in cancer care delivery to the patients (Prajapati et al., 2021). These delays in cancer care delivery may have long-term morbidity and survival implications for patients who missed cancer screenings during this period. Delays in diagnosis can result in cancer progression to a more advanced stage, resulting in increased morbidity and higher mortality rates.

Our institute continued emergency oncology care during the COVID pandemic with COVID appropriate protocols. In our study, it was observed that the demography of treated patients during the covid times was significantly different from that of the preceding control year as greater number of primary musculoskeletal tumour patients were reported during the covid times as compared to pre-covid times. This demographic change could be multifactorial viz. covid related health crisis shifting cancer care delivery from small centres to tertiary care centres and easier access to outpatient department by teleconsultation leading to early identification of cancer patients (The Paradoxical Effects of COVID-19 on Cancer Care: Current Context and Potential Lasting Impacts - PubMed, n.d.). Another possible reason could be the prompt referral of such cases from the point of first contact in the covid times.

Also, there has been a decline in the secondary musculoskeletal tumour admissions during the covid times. This could be due to reduced screening measures as well as inability of such patients to avail healthcare services owing to the pandemic.

There has been a delay in first admission to final surgery time during the pandemic as compared to pre-covid times, however this difference is not statistically significant. The delay might be due to modified institutional protocols for admission requiring mandatory covid screening and reduced availability of intensive care units as well as

operating theatres due to the pandemic. There have been reported delays in initiation of chemotherapy of newly diagnosed oncology cases as well as delays in administration of already registered oncology patients, owing to multiple factors during covid pandemic (Gulia et al., 2020).

The effects of covid 19 are even more severe on oncology patients, owing to their immunosuppressed status, making them more susceptible to covid 19 infection as well as its long-term complications. Stevenson et al (Stevenson et al., 2020) showed that of 100 patients with primary malignant bone or soft tissue tumours undergoing treatment during the pandemic, the 30-day mortality rate was 1% overall and 20% in patients who contracted COVID-19. They concluded that with appropriate perioperative measures to prevent viral transmission, urgent orthopaedic oncology procedures should continue during pandemic without excessive risk to the patient.

At the peak of pandemic when the physical outpatient departments were closed, our institute encouraged teleconsultation for maintenance of continuity of care. Follow-up patients and those on chemotherapy and radiotherapy were contacted at timely intervals via teleconsultation and asked to visit physically only when absolutely necessary. This ensured continuity of care while minimising risk of hospital acquired covid infection.

A significantly greater number of patients were lost to follow-up after the initial histopathologic diagnosis during the covid period as compared to the pre-covid times. This difference could be due to inability of the patients to avail the healthcare services in view of nationwide lockdowns and travels restrictions in most parts of the country. An increased load of patients in cancer care facilities is expected in future times when patients start to visit hospitals for screening, diagnosis, treatment initiation or continuation, and follow-up. A shift to virtual platforms via teleconsultation may help in triaging the orthopaedic oncology patients for early diagnosis and timely initiation and delivery of treatment as well as to control the footfall in the hospitals in the post covid times.

Limitations

This was a retrospective analysis of institutional records and hence, there could be a selection bias.

CONCLUSION

Covid-19 outbreak has led to delays in management of musculoskeletal tumour patients though these are not statistically significant. There has been a significant decline in presentation of secondary tumour patients during pandemic times. A carefully thought-out plan should be made in order to balance the risk of contracting covid and providing optimum and timely care to musculoskeletal tumour patients. The way forward suggests a shift of healthcare to virtual platforms which could have a lasting impact on healthcare services.

Conflict Of Interest

On behalf of all authors, the corresponding author states that there was no conflict of interest in this study.

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