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Original Research Article

Impact of COVID-19 pandemic (wave 2) and associated lockdown on wound care and the resultant increase in the number of amputations

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ABSTRACT

Background: The COVID-19 pandemic has had an unparalleled impact on the socio-economic and healthcare structure of the entire world, including India. The risk of major amputations has increased during the COVID-19 lockdown. Aim of the study was to conduct a single-centered study on the prevalence of major amputations during the pre-pandemic and pandemic period to evaluate the indirect effect of the COVID-19 lockdown on people with lower limb cellulites and wounds. This study also emphasizes on the importance of easy and routine access to foot-care specialist.
Methods: The data of patients attending the outpatient and emergency room of general surgery in K. R. Hospital with complaints of cellulites/wounds/ulcers during the months of March to July was evaluated. The number of amputations done during same time period was analyzed.
Results: The patients attending outpatient department (OPD) during the lockdown had a fall, while cases and amputations immediately after lockdown had increased.
Conclusions: The findings of the present study, reiterate the role of preventive actions in wound care and stress on the importance awareness of complications if such wounds are ignored.

Keywords: COVID, Amputation, Cellulites, Diabetic foot

INTRODUCTION

The COVID-19 pandemic in its second wave created just as much havoc as it did during its first. The nationwide tally of people affected with COVID-19 as of March 2021 (second wave) was at 1,19,71,624 and the daily deaths crossed the 300-mark for the first time in 2021, according to the Union Health Ministry.1The mandatory lockdown, which was initiated in view of increasing numbers, significantly affected patients with chronic diseases, including people with diabetes and diabetic foot ulceration (DFU), cellulites, necrotizing fasciitis and other wounds which represents a heavy burden for health care systems in terms of mortality and reduced quality of life.[2,3] The current prevalence of diabetes in India is 19%.[4] The interruption of preventive education, early treatment, and diagnosis may have led to increased hospitalization of patients with severe DFU, cellulites, necrotizing fasciitis and wounds and resulted in high risk of amputation.[5]A strict lockdown was imposed in Mysore from 27 April to 05 June 2021.[6] Mysore was the last of the districts in Karnataka to uplift the lockdown. Elective treatments were generally suspended, and only emergency surgical care was being provided. Patient care classified as non-urgent at the outset of the pandemic was deferred and in-person outpatient physician interaction was largely replaced.

Amputation surgeries are indicated commonly in the patients, whose limbs are dead, or patients whose limbs are deadly and pose a life threat to them, or patients whose limbs are painful, functionless and constitute nuisance.[7] The cases that require immediate treatment include those having ongoing tissue bleeding or to alleviate severe pain or infection. The hypothesis behind this study was that the number of admissions for urgent wound care was directly related to the different moments of the pandemic.

METHODS

A retrospective single-center study was conducted as a clinical audit after approval by an ethics committee was sought. The study was focused on the activity of the wound care service provided in K. R. Hospital, Mysore during the various phases of the pandemic.

The study was designed as a comparison of the health services provided by the hospital in three different periods, 01 March 2021-26 April 2021 (pre lockdown), 27 April-05 June 2021 (lockdown) 06 June-31 July 2021 (the unlock period) representing the second wave of severe acute respiratory syndrome corona virus-2 (SARS-CoV-2) spread. Data from patients who had visited the OPD and emergency during the three periods were extracted and analyzed. The indications were analyzed and found to be as follows, complications of DFU, spreading cellulites, necrotizing fasciitis and gangrene secondary to ischemia. The patients were analyzed on the basis of etiology, clinical features including extent of inflammation, pouring pus, peripheral pulses and extent of gangrene and biochemical investigations, such as TLC, RFT, and LFT. Doppler studies were done in patients with pulseless-ness and gangrene. X-rays of the limbs were done in case of DFUs to look for Charcot's anomalies. The treatment provided was debridement and major lower limb amputations along with antibiotics and other general management. The patients with pouring pus and extensive cellulites with myositis had elevated TLC and deranged parameters suggesting they were in MODS and such patients needed amputation. The number of such patients was significantly higher in the reopening period.

Statistical analysis

The statistical analysis was done using the statistical package for the social sciences (SPSS) software and appropriate tests applied, and a p value calculated.

RESULTS

The study included a data of 76 admissions over a period of the decided 5 months with complaints of wounds due to various reasons, managed at the department of general surgery in K. R. Hospital, with 45 admissions made in the pre-lockdown period, 4 admissions done during the lockdown, and 27 admissions made after the reopening of the lockdown of the second wave (Table 2). A decrease in the admissions was observed during lockdown, when compared to the pre-lockdown period. The number of admissions was statistically significantly associated ($p<0.01$) with the mean number of new cases of COVID-19 recorded in each period as calculated using SPSS software.

During the period of reopening, the number of patients who requested urgent care increased when compared to lockdown period. The mean age of all patients was 52 years and most patients were above 50 years of age. The number of males was more than the number of females across all three time periods (Table 1). The total number wound cases admitted in the pre lockdown were 45 out which 21 underwent amputations that is 40%, while soon after re opening 27 cases were admitted out of which 19 cases underwent amputations which is 91%, clearly showing that need for amputations increased after re opening as the cases at presentation had unsalvageable limbs owing to poor follow up, lack of access to regular dressings, and regular visits due to the lockdown (Table 3).

Table 1: Gender and age distribution across patients who underwent amputations.

Age (years)	Gender	
	Male	Female
<40	1	
40-50	18	1
>50	20	2

Table 2: Pattern of admissions of wound cases in various periods of pandemic.

Period	No. of cases
Pre-lockdown	45
Lockdown	4
Reopening	27

Table 3: Number of amputations in various periods of pandemic.

Period	No. of cases
Pre-lockdown	22
Lockdown	2
Reopening	19

Table 4: Various indications of amputations in various periods of pandemic.

Indications	Total admissions	No. of amputations
Necrotising fascitis	25	18
Cellulitis	12	6
Diabetic foot	20	13
PAOD	19	5

Table 5: Symptoms.

Indications	Fever	Pus
Necrotising fasciitis	14	13
Diabetic foot	5	13
Cellulitis	11	11
PAOD	-	-

The number of above and below knee amputations were found to be equal in number at 21 each. Four indications for amputations were found as follows, DFU, cellulites, necrotizing fasciitis and peripheral arterial occlusive

disease (PAOD) associated with gangrene. The most common indication was necrotizing fasciitis while least common was PAOD (Table 4).

All the diabetic foots requiring amputations had raised TLC, while 15 out of 18 necrotizing fasciitis had raised TLC (Table 6). Most of the diabetic foot, necrotizing fasciitis and cellulitis patients was in MODS as suggested by derranged RFT and LFT, while none of the PAOD cases were affected. Six of the patients with diabetic foot, showed Charcot's deformity on X-ray.

Table 6: Biochemical parameters.

Indications	TLC	MODS
Necrotising fasciitis	15	14
Diabetic foot	5	3
Cellulitis	13	10
PAOD	2	-

DISCUSSION

The present investigation showed a significant modification in the number of admissions and treatments performed for wounds in K. R. Hospital, Mysore during the COVID-19 pandemic. These changes were significantly associated with the SARS-CoV-2 epidemiological trend and restrictions imposed by the authorities.

In the present study, the number of patients seeking urgent care was inversely associated with the SARS-CoV-2 epidemiologic spread and this trend was observed both in females and males regardless of age. As a consequence of the lockdown and the travel restrictions a significant drop in admissions occurred during the lockdown while a rebound was registered during the reopening period. To the best of the authors' knowledge, no previous studies have investigated the trend of amputations during the different phases of the pandemic. Emergency admissions were strongly reduced during the COVID-19 outbreak worldwide, as suggested by previous studies reporting a variable reduction in visitors ranging from 38% to 80%.[8,9] National and international guidelines released by the different Associations have advocated limiting medical activities to emergencies and urgent life-threatening conditions in order to encourage social distancing.[10-12] The reduction in patients recorded during lockdown of the second wave in the OPD could be a consequence of a raising awareness about what should be considered a medical or surgical emergency and a widespread fear of going to an emergency department and/or hospital.[10] Elective surgical activities have since then struggled to recover because of the ongoing economical and healthcare difficulties such as shortages of personal protective equipment, shunting of equipment and personnel for COVID management and delayed admissions in offices due to the COVID-19 restrictions.[13,14]

The raising awareness and acknowledge about COVID-19 clinical features, regardless of the actual spread of coronavirus infection, might have induced people to follow social distancing rules more, thus also avoiding visiting the OPD if not strictly necessary during the lockdown.

CONCLUSION

The results of this investigation performed on admissions and wound care at OPD and emergency in K. R. Hospital in Mysore suggests that the COVID-19 pandemic has highly affected elective surgical activities in Mysore. The number of admissions was inversely associated with the COVID-19 pandemic evolution; significantly fewer patients sought urgent care during the lockdown of the second wave. A rebound was instead observed during the reopening.

A significant reduction in wound related emergencies and amputations were reported during lockdown. A significant increase in number of consultations and other types of treatments was observed during reopening.

This study threw light on the importance of wound care and the drastic end result, negligence and untimely treatment can cause. Therefore we would like to stress on considering wound care as an essential service and treating wounds as a surgical emergency, essential role of preventive actions in wound care and importance of need for awareness of complications if such wounds are ignored amongst patients.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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