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Impact of Covid-19 Pandemic in Non-Emergent Urological Care: A Single Center Analysis

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic has put a substantial burden on the healthcare system of Bangladesh, resulting in the restructuring of hospitals to care for COVID-19 patients. However, this has likely impacted access to care for patients experiencing both non-emergent and urgent/emergent conditions. We aimed to quantify the impact of COVID-19 on access to care for patients with non-emergent urological conditions in urology department of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh. **Methods:** The number of Patients who were presented with non-emergent urological conditions during a4-month period including one reference month and 3 months during peak of the COVID-19 pandemic, in urology outpatient department (OPD) of BSMMU and underwent surgical procedure were considered representative markers to evaluate the usual non-emergent urological access. ANOVA test were used to quantify these changes. **Results:** Data from urology department of BSMMU showed a decrease in the total number of surgery done for non-emergent urological casesfrom 182/month just prior to the outbreak to 28/month by the end of the study period. A statistically significant difference was reported between thenumber of non-emergent urological cases ($p< 0.05$) who underwent surgical intervention by different subspecialties in these months. **Conclusion:** In BSMMU during the COVID-19 pandemic there has been a decrease in patients seeking help for non-emergent urological conditions. Restructuring the healthcare facilities of this institution is mandatory to cope with COVID-19; moreover the healthcare delivery system should continue to provide adequate levels of care also to patients other conditions.

Keywords: Covid-19, Urological Care, Pandemic in Non-Emergent.

INTRODUCTION

The recent outbreak and diffusion of respiratory disease(COVID-19) caused by newly discovered corona virus (Sars-CoV-2) led to a worldwide pandemic as declared by WHO on 11th March 2020.[1,2] After spreading in Wuhan city, Hubei province in China, the SARS-CoV-2 reached several different countries. Bangladesh was among one of them with the first case reported on March 8th, 2020. As of 15 March 2021 a total of 557395 Bangladeshi citizens were diagnosed positive with Covid-19 and a total of 8545 passed away.[3] Official lockdown was declared initially and extended to all of the Bangladesh till December 2020. BSMMU is one of the regional COVID-19 referral centres with the creation of new COVID dedicated unit with state of art facilities and Intensive care unit (ICU). The Urology department of BSMMU is an academic referral centre as well as a tertiary- level health care centre in Bangladesh, it continued elective urological activities and also shifted medical personnel to dedicated COVID-19 unit as per needed to combat this worldwide pandemic. During the period of COVID-19 lockdown, the Urology department experienced a remarkable reduction of urological outpatients as well as inpatients that usually should not have decreased. We hypothesized that rapid spread of virus in this densely populated capital city with limited accessibility during this pandemic situation and lack of COVID-19 dedicated OT complex led to a disruption in the care of patients presenting with various non-emergenturological conditions. Urological non emergent conditions, including BEP with chronic retention, Chronic upper and lower urinary tract obstruction, Hypospadias, Urethral stricture, Renal stone disease, Urological malignancies, Voiding dysfunction, Undescended testis, unobstructed hernia and hydrocele are not uncommon situation. Although these are non-emergent disorders but delay to recognize and to manage these conditions may lead to potential loss of organ function with serious impairment such as renal failure or organ damage or even may progress to an inoperable stage in case of malignancies [4-5].This single centre study is to quantify changes in non-

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emergent urological care in Bangladesh in the midst of the COVID-19 pandemic.

MATERIALS AND METHODS

Bangabandhu Sheikh Mujib Medical University (BSMMU) is centre of excellence for urological treatment in Bangladesh with highest level of academic and research facility. Data from urology department of this centre were included in this study. The number of Patients who were presented with non-emergent urological conditions (e.g. BEP with chronic retention, Chronic upper and lower urinary tract obstruction, Hypospadias, Urethral stricture, Renal stone disease, Urological malignancies, Voiding dysfunction, Undescended testis, unobstructed hernia, hydrocele) in outpatient department(OPD) and underwent surgical procedure were considered representative markers to evaluate the usual non-emergent urological access. Accessibility to the operating facilities after being admitted into indoor ward of urology department through OPD were reported for the months of February 2020, September 2020, October 2020 and – as a reference – a standard month before February 2020. Data was recorded in real time, based on the scheduling of each sub divisions in urology department of BSMMU and in accordance with the ethical committees.

In the analysis we summarized non-emergent urological cases underwent different surgical facilities and stratified these data by sub specialities through which those cases were dealt with. We used ANOVA test to examine the change in the number of cases presenting across the 4-month period. All statistical analysis was performed with "R statistical software" a programming language and open source software environment for statistical computing supported by R foundation.

RESULTS

Across 6 sub specialities in Urology department of BSMMU, 182 patients underwent different surgical procedures (e.g. Endo-urological/Open/Laparoscopic) in the reference month (prior to the COVID-19 outbreak) and this number decreased to 28 by the month of October 2020. Using ANOVA models, we observed a statistically significant difference between months in number of non-emergent urological cases ($p < 0.05$) those underwent through surgical intervention from by different subspecialties (Table.1). Additionally there were decreases in number of overall patients who underwent surgeries in terms of operating facilities from minimally invasive to open procedures (Table.2). This decrease was not significant ($p > 0.05$). Examining trends across the study period, we observed a significant linear decrease in non-emergent surgical patients (Fig.1). In sensitivity analyses, we investigated whether the area of BSMMU impacted the observed trends in decreases in patients seen (non-emergent cases), but found no evidence of interaction by geographic area. Finally, we additionally investigated whether there were any differences between private and public or academic and non-academic institutions, but found no differences.

Table 1. Non-emergent urological patients admitted under different sub speciality.

	Reference month January 2020	COVID-19 Month February 2020	COVID-19 Month September 2020	COVID-19 Month October 2020	Statistical significance (p <0.05)
Total number of Surgery done for Non-emergent Urological cases	182	20	29	28	
Cases by Sub speciality					
General Urology	98	15	13	10	
UroOncology	38	0	7	5	
Pediatric Urology	13	3	3	5	P value0.04
Transplant Urology	0	0	0	0	
NeuroUrology	14	0	2	3	
Female Urology &Andrology	19	2	4	5	

Table 2. Non-emergent urological patients underwent various surgical intervention.

Cases by available surgical options	Reference month January 2020	COVID-19 Month February 2020	COVID-19 Month September 2020	COVID-19 Month October 2020	Statistical significance (p <0.05
Endo-urology (URS, TRUP, TURBT, TRUS biopsy, DVIU, Fulguration of PUV, Cystoscopy, DJ Stenting/removal	135	20	22	25	P value 0.25
Open surgery	42	0	6	3	
Laparoscopy	5	0	1	0	

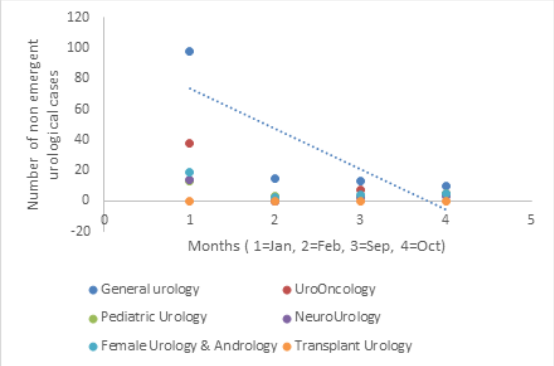

Figure 1: Trend of non-emergent urological cases underwent surgery.

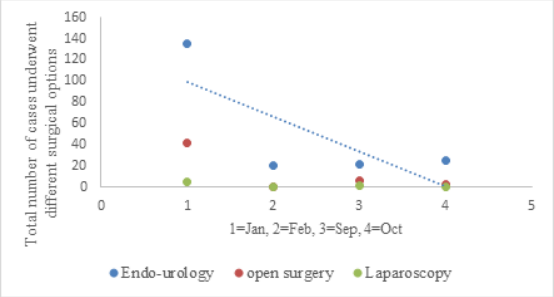

Figure 2: Trend of non-emergent cases dealt with different surgical options.

DISCUSSION

This single centre analysis summarizes the changes in access to non-emergent urological care in a tertiary level hospital during the COVID-19 pandemic. We found across a 4-month period including one reference month and 3 months during peak of the COVID-19 pandemic, a gradual and significant decline of overall access of non-emergent urological cases requiring non-emergent urological management including BEP with chronic retention, Chronic upper and lower urinary tract obstruction, Hypospadias, Urethral stricture, Renal stone disease, Urological malignancies, Voiding dysfunction, Undescended testis, unobstructed hernia and hydrocele. Although there was a decrease in the number of non-emergent cases dealt with available different surgical options but it was not significant. This decreased number of access might be justified by the restrictions applied in Bangladesh as well as in BSMMU during this pandemic situation. Lack of COVID-19 dedicated OT complex and fixed number of OPD consultation per day also might be an important cause of this progressive decline of non-emergent urological cases. The restriction for unnecessary movements of the people except for health issues (the so-called lockdown) in response to growing pandemic might explain this decline. Also, staying home and avoiding outdoor activity may be a potential explanation for a decreased number of cases with non-emergent condition. The COVID-19 pandemic has a significant impact on management of urological cases. Normal urological activity has been markedly reduced during this period. This worldwide disaster has illustrated the need for a different type of care during pandemics. European Association of Urology (EUA) established a rapid reaction group after the virus outbreak to develop and adaptive guideline to deal with various situations and priorities. They divided urological diseases and conditions into following 4 priority levels.[6]

- Low priority: clinical harm very unlikely if postponed for 6 months
- Intermediate priority: clinical harm possible, but unlikely, if postponed for 3-4 months
- High priority: clinical harm very likely if postponed for >6 weeks
- Emergency: life threatening situation – cannot be postponed for>24 h

Evidence from Wuhan shows that the mortality rate of asymptomatic patients who tested positive for COVID-19 after surgery was 20%.[6] Therefore, in the process of treating patients, doctors should choose the appropriate treatment plan according to the priority level. The latest guidelines provide some suggestions; for instance, surgery can be performed on high-priority and emergency patients during the COVID-19 pandemic, but surgery is not recommended for intermediate-priority patients.[7] Abide by the recommendation of EUA might be another important cause for gradual declining the number of surgery for non-emergent urological cases as they were included in intermediate priority group. According toEUAguideline in our study,[6] all patients received a preadmission RT-PCR for COVID-19 and underwent another COVID-19 test within 48 h before surgery and ensured that patient was tested negative. All medical staff used complete PPE regardless of the patient's COVID-19 status. The operations were performed by experienced surgeons and all unnecessary personnel wereremaining outside the operating room. Electro-cautery devicesused on reduced power settings to decrease the generation of surgical smoke. Flushing fluid wascollected through a closed system during the urological procedure. Elderly patients with comorbidities, even in high-priority cases, were carefully considered for surgery. If any surgical patient is diagnosed with COVID-19, operation was deferred as COVID dedicated special operation theatre was not available in this centre and patient was referred to dedicated COVID-19 facilities for immediate management of COVID-19 at first. Aerosoltransmission of COVID-19 was not ignored because it can survive in the environment for 3h.[8] Because of this, we used the lowest intra-abdominal pressure on the pneumoperitoneum during laparoscopic surgery to reduce the risk of medical staff aerosol infection. We also used lower power settings on electro cautery since ultrasonic scalpels or electrical devices may produce a large amount of surgical smoke. Additionally, adequate and complete deflation of the pneumoperitoneum may reduce the

risk of infection. All surgeons used goggles or sealed sunshades and carefully disinfected this logistics. Furthermore, during endoscopic procedures and urethral catheterization were performed with caution, and surgeons were completely protected even for all COVID-19 negative cases. This study was, as the situation warranted, conducted with careful haste. It provides a snapshot of the effect COVID-19 pandemic in non-emergent urological care. However, although urological centres from across Bangladesh were not included and thus it may not represent the urological practice throughout the country, there could, of course, be aberrations, with only one centre reporting here. Additionally, although it is likely that these same patterns would be observed in any other specialty, this work is limited to urological data. Finally, although our country's healthcare system is on par with those across Asia, some aspects of these findings may not be directly transferable to other Asian countries because of systematic and cultural differences. Acknowledging these limitations, the current paper represents probably the first series so far exploring the impact of COVID-19 on the access to care for non-emergent urological conditions. In particular, our findings strongly suggest that further protocols and facilities would be needed to provide care also for those patients who will inevitably develop other urgent or emergent conditions, irrespective of the COVID-19 pandemic. In this context, we identified future perspectives for the improvement of healthcare assistance: (1) create specific areas for the surgical treatment of patients positive for COVID-19, either inside or outside of the existing structures; (2) improve education regarding infectious disease transmission for all healthcare providers; (3) meaningfully limit visitors' access to reduce the risk of contagion and, at the same time, to enhance patient's and employee's safety; and (4) delaying urological surgery should be considered whenever acceptable for the underlying disease, as reported by Stenslandet al.[9] as a way of prioritizing the most urgent urological cases.

CONCLUSION

This single centre study of urological unit of BSMMU in Bangladesh, found a significant decrease in the number of patients treated for non-emergent urological conditions across a 4-months period during the COVID-19 pandemic. It is reasonable to assume that these patterns are being observed in other specialties as well. Bangladesh has been substantially affected by the COVID-19 outbreak, with a huge number of diseased individuals and non-negligible death rate of COVID-19 patients as of the end of October 2020.[10] This outbreak has affected not only individuals with COVID-19, but also patients seeking care for other urgent, emergent as well as non-emergent conditions. Continued restructuring of the healthcare delivery system is necessary to be able to continue providing a high level of care to all patients, even during times of pandemics.

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