

## Research Communication

# Impact of the COVID-19 pandemic on urological practice in emergency departments in Italy

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the disease it causes, coronavirus disease 2019 (COVID-19), are causing a rapid and tragic health emergency worldwide [1,2]. Italy was the first European country to experience a virus outbreak, starting on 21 February 2020. It resulted in a national quarantine, and the official lockdown of the country's non-essential businesses and services began on 9 March 2020. Although several reports are available in the literature providing recommendations for the reorganization of clinical and surgical activities [3–7], to our knowledge, no data are available on the effects of the COVID-19 pandemic on the outcomes of other medical conditions. For this reason, we aimed to evaluate the urological component of emergency department activities during the COVID-19 pandemic, assessing the requests for urgent urological consultations in a network of academic and non-academic hospitals in Italy.

To assess the impact of the COVID-19 pandemic on urgent outpatient urological practice, we evaluated the urological consultations performed in emergency departments in a specific week, after the national lockdown of the country starting on 9 March 2020. Accordingly, we considered those patients assessed between 16 and 22 March 2020 (12th week of the year). Data on the patients observed in the same week of 2019 (between 18 and 24 March 2019) were also collected to provide a control group. A total of eight academic and non-academic urological centres (ASST Fatebenefratelli-Sacco, Sacco Hospital, Milan; Cattinara Hospital, University of Trieste, Trieste; IRCCS Venetian Oncological Institute, Castelfranco Veneto, Treviso; San Luigi Hospital, University of Turin, Orbassano, Turin; Sant'Andrea Hospital, Sapienza University of Rome; S. Croce e Carle Hospital, Cuneo; University of Messina; University of Pisa) that are affiliated with the Research Urology Network (RUN) provided data. Patients were categorized according to the colour tags used in the emergency departments for triage.

Continuous variables are reported as median and interquartile ranges. Differences in variables with a continuous distribution across dichotomous categories were assessed using the Mann–Whitney *U*-test. Pearson's chi-squared test was used to evaluate the association between categorical variables. All reported *P* values are two-sided, and statistical significance was set at  $P < 0.05$ . All statistical analyses were performed with IBM SPSS Statistics for MacOS, version 26 (IBM Corp., Armonk, NY, USA).

We identified 124 urological consultations in emergency departments in 2020 and 275 in the corresponding week of 2019. That corresponds to a 55% year-on-year decrease in the overall number of consultations.

Table 1 summarizes the clinical characteristics of the observed patients. On the whole, we identified significant geographical differences, with the decrease being higher in the centres from Northern Italy (–64%), the region of the country more severely hit by the COVID-19 pandemic, and, surprisingly, in the only centre in Southern Italy (–82%).

Patients observed in 2020 were significantly older than those in 2019 consultations ( $P = 0.004$ ). They had received a previous emergency department consultation evaluation for the same clinical complaints in a lower percentage of cases (23% vs 30%;  $P < 0.001$ ). The most common clinical diagnoses were colicky flank pain, gross haematuria, and acute urinary retention. Notably, a significant difference in the distribution of the diagnosis was observed ( $P = 0.04$ ). Following the emergency department consultation, a similar percentage of patients was hospitalized for urological conditions (22% and 25% in the 2020 and 2019 weeks, respectively).

A higher percentage of patients with gross haematuria received early endoscopic management in 2020 (46% vs 0%;  $P = 0.008$ ). Similarly, the proportion of patients with colicky flank pain who received immediate JJ placement or endoscopic lithotripsy was higher in 2020 (28% vs 15%); however, the difference between the two groups did not meet conventional levels of statistical significance ( $P = 0.06$ ).

To our knowledge, the present report is the first analysis of data on the modification of clinical activity secondary to the virus outbreak in a branch of medicine unrelated to the COVID-19 pandemic. There were several interesting findings. Firstly, a substantial decrease in the number of urgent urological consultations was observed. Secondly, that decrease was heterogeneously distributed across the country, with hospitals in the northern part of Italy that was more severely hit by the COVID-19 pandemic reporting a more considerable reduction. Conversely, the number of consultations was stable in the institutions in Central Italy. Thirdly, the patients who arrived at hospital were significantly older and had a slightly different spectrum of urological conditions, including more cases of gross haematuria and acute urinary retention, conditions commonly considered as

**Table 1** Clinical characteristics of the observed patients.

Variables	Cases in 2020, urgent consultations (n = 124, 31%)	Cases in 2019, urgent consultations (n = 275, 69%)	P
Regions, n (%)			
North-western Italy (3 centres)	26 (21)	77 (28)	<0.001
North-eastern Italy (2 centres)	43 (35)	113 (41)	
Central Italy (2 centres)	50 (40)	57 (21)	
Southern Italy (1 centre)	5 (4)	28 (10)	
Men, n (%)	105 (85)	213 (78)	0.1
Patients' median (IQR) age, years	72 (56–81)	64 (47–77)	0.004
Median (IQR) symptoms duration, h	24 (12–84)	24 (12–72)	0.6
Emergency department triage code, n (%)			
White tag	17 (14)	69 (25)	0.06
Green tag	79 (63)	146 (53)	
Yellow tag	26 (21)	58 (21)	
Red tag	2 (2)	2 (1)	
Prior emergency department consultation for the same clinical condition, n (%)	29 (23)	81 (30)	<0.001
Prior assessment by general practitioner consultation for the same clinical condition, n (%)	10 (9)	18 (8)	0.9
Clinical diagnosis, n (%)			
Renal colicky pain	36 (29)	83 (30)	0.04
Gross haematuria	26 (21)	35 (13)	
Scrotal pain	7 (6)	27 (10)	
Uncomplicated urinary infection	1 (1)	20 (7)	
Complicated urinary infection	5 (4)	8 (3)	
Acute urinary retention	29 (23)	48 (17)	
Genitourinary trauma	2 (1)	5 (2)	
Indwelling urethral catheter malfunction	8 (6)	13 (5)	
Indwelling nephrostomy tube malfunction	5 (4)	11 (4)	
Other	5 (4)	25 (9)	
Final decision following emergency department consultation*, n (%)			
Hospitalization	27 (22)	68 (25)	0.8
Discharge home	88 (71)	165 (67)	
Indication for further diagnostics	9 (7)	21 (8)	

IQR, interquartile range. \*Data missing in 21 cases from 2019.

undeferrable. Likewise, life-threatening conditions such as trauma were mostly unchanged, whereas the prevalence of less severe clinical diseases, such as uncomplicated urinary infections, decreased. Lastly, we identified a pattern of more aggressive treatment in two specific conditions; specifically, the number of early haemostatic transurethral resections for gross haematuria was higher in the 2020 patients. That was mainly attributable to the need to reduce the need for blood

transfusions as much as possible, considering the shortage of blood products resulting from decreased donation [4,7], and to shorten the length of stay. Similarly, the number of JJ stenting and ureteroscopy procedures for urinary stones was numerically higher in the current year as compared to 2019. That was mainly attributable to the need to resolve the patient's clinical problem (i.e. recurrent pain and/or urosepsis), thus preventing them from repeated presentation to hospital, which could have ultimately increased the risk of contagion. In this context, the choice of the most appropriate treatments (stenting alone vs endoscopic lithotripsy) was mainly related to patients' condition, size and position of the stones, in agreement with the currently available guidelines [8], as well as the local availability of urologists, anaesthesiologists and other health workers in this challenging period [7].

The present report is noteworthy for several reasons. All urology departments in Italy and worldwide are facing reorganization and restriction of their activity to differing extents. Recommendations have been recently implemented on the way to perform such a reorganization [4,7], and on which surgical procedures to prioritize [3,5,6]. However, in addition to this, the present report suggests that the urological departments of the different institutions should be prepared and equipped to manage approximately 50% of their usual urological activities in their emergency departments, including specialized services for urgent management of lower and upper urinary tract diseases. However, from the emergency department perspective, it should be taken into consideration that the amount of activity related to the urgent urological conditions has been approximately halved but not reduced to zero. Although data from other medical and surgical specialties are lacking, our findings imply that physicians in emergency departments must be present to handle non-COVID patients in a proper measure according to the level of diffusion of the virus outbreak in the different countries. Finally, all clinicians suspect and fear that a significant number of patients with major medical conditions unrelated to COVID-19 are not arriving at hospital in the present period because of movement restrictions and fear of the contagion. However, our data seem to suggest that, at the moment, this is not happening on a massive scale, at least not for urgent urological diseases. However, only in the coming months will we be able to understand how many and eventually which urological conditions experienced a diagnostic delay as a result of the pandemic.

The present report has some limitations, first and foremost, those related to its retrospective design. Second, the involved institutions collected information on the experience of different regions of the country, in which the level of emergency associated with the COVID-19 pandemic differed (the highest in Lombardy, high in the rest of Northern Italy, more modest in Central and Southern Italy). Consequently,

the availability of resources in the different centres, as well as patients' fear of violating the quarantine in order to reach hospital, could differ. Third, the clinical settings of the institutions involved are different, with some of them being the main centre of emergency care in their area, while centres in metropolitan areas can share the burden with other institutions. Finally, the present assessment is only a snapshot of the situation in a specific week. Consequently, the number of cases was not extremely large. A more prolonged evaluation would be needed to report the evolution of the problem, along with the diffusion of COVID-19 across the country.

In the present report evaluating urological consultations in emergency departments during one week of the COVID-19 pandemic, we found a substantial decrease in the number of urgent consultations. The reduction was heterogeneously distributed across the country. The patients observed in the 2020 group had a slightly different spectrum of urological conditions compared with those in the control group. The most common diagnoses were colicky flank pain, gross haematuria and acute urinary retention. The prevalence of life-threatening conditions, such as trauma, was stable. As a consequence of the current situation, we observed an increase in the adoption of some endoscopic urological procedures to treat mainly bladder cancer.

## Conflict of Interest

None declared.

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## References

- 1 Wang D, Hu B, Hu C et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* 2020; 323: 1061.
- 2 Remuzzi A, Remuzzi G. COVID-19 and Italy: what next? *The Lancet* 2020; 395: 1225–8
- 3 Stensland KD, Morgan TM, Moinzadeh A et al. Considerations in the triage of urologic surgeries during the Covid-19 pandemic. *Eur Urol* 2020; 77: 363–6. <https://doi.org/10.1016/j.eururo.2020.03.027>
- 4 Ficarra V, Novara G, Abrate A et al. Urology practice during COVID-19 pandemic. *Minerva Urol Nefrol* 2020. <https://doi.org/10.23736/S0393-2249.20.03846-1>
- 5 Gillissen S, Powles T. Advice for medical oncology care of urological cancer patients during the COVID-19 pandemic. *Eur Urol* 2020; 77: 667–8. <https://doi.org/10.1016/j.eururo.2020.03.026>
- 6 Ribal MJ, Cornford P, Briganti A et al. Guidelines Office Rapid Reaction Group: an organisation-wide collaborative effort to adapt the EAU guidelines recommendations to the COVID-19 era. *Eur Urol* 2020 (in press)
- 7 Simonato A, Giannarini G, Abrate A et al. Pathways for urology patients during the COVID-19 pandemic. *Minerva Urol Nefrol* 2020. <https://doi.org/10.23736/S0393-2249.20.03861-8>
- 8 Türk C, Neisius A, Petrik A, Seitz C, Skolarikos A, Thomas K. EAU guidelines EAU Guidelines on Urolithiasis. Available at <https://uroweb.org/wp-content/uploads/EAU-Guidelines-on-Urolithiasis-2020.pdf>. Accessed March 2020

## Appendix

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