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Guess Who's Coming to Dinner: COVID-19 in a COVID-free Unit

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OBJECTIVE To assess the impact of the pandemic on surgical activity and the occurrence and features of Covid-19 in a Covid-free urologic unit in a regional hospital in Northern Italy.

MATERIALS AND METHODS Our Department is the only urologic service in the Trento Province, near Lombardy, the epicenter of Covid-19 in our Country. We reviewed the surgical and ward activities during the 4 weeks following the national lockdown (March 9 to April 5, 2020). The following outcomes were investigated: surgical load, rate of admissions and bed occupation, and the rate and characteristics of unrecognized Covid-positive patients. Data were compared with that of the same period of 2019 (March 11 to April 7).

RESULTS AND CONCLUSION About 63%, 70%, 64%, and 71%, decline in surgery, endoscopy, bed occupation, and admission, respectively, occurred during the 4 weeks after the lockdown, as compared to 2019. Urgent procedures also declined by 32%. Three (8%) of 39 admissions regarded unrecognized Covid-19 overlapping or misinterpreted with urgent urologic conditions such as fever-associated urinary stones or hematuria. In spite of a significant reduction of activity, a non-negligible portion of admissions to our Covid-free unit regarded unrecognized Covid-19. In order to preserve its integrity, we propose an *enhanced triage* prior to the admission to a Covid-free unit including not only routine questions on fever and respiratory symptoms but also nonrespiratory symptoms, history of exposure, and a survey about the social and geographic origin of the patient. UROLOGY 142: 22–25, 2020. © 2020 Elsevier Inc.

With 187,327 documented cases and 25,000 deaths as of April 22, 2020, Italy was hit very hard by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Following the publication of a new decree limiting the movement of individuals in the whole Italian national territory on March 10[1] and the declaration of Covid-19 pandemic on the basis of "alarming levels of spread and severity" by the World Health Organization on March 11,[2] our national health system underwent a gradual and profound reshape. In order to minimize resources exhaustion and transmission risks, elective surgery and admissions were canceled or postponed, and entire Departments converted into Intensive Care and Intermediate Care Units. In the massive reorganization of the hospital, our Department of Urology decreased its clinic and surgical load but remained active as a Covid-free, operating service. However, the levels of activity and safety during a pandemic can be undermined by the risk of admitting patients with unrecognized Covid disease in the ward and operating rooms. In fact, hospital-associated transmission was suspected as the presumed mechanism of infection for 41% affected health professionals and hospitalized patients.[3] Our objective is to assess the impact of the pandemic and the occurrence and characteristics of Covid-19 in a Covid-free urologic unit in a regional hospital in Northern Italy during the 2020 outbreak.

MATERIALS AND METHODS

Setting

Our Department is the only operative urologic service in the Trento Province, serving an area of approximately 540,000 inhabitants in the North-Eastern alpine area of Italy, bordering with Lombardy, the epicenter of Covid-19 in our Country. Our Department has an operating capacity of 25 beds and 12 full-time attending physicians. All the surgical and ward activities during the 4 weeks following the national lockdown (March 9 to April 5, 2020) were reviewed. Electronic records and charts of all Patients admitted to our Department during this time lapse were evaluated by attending physicians.

Covid Management

In case of a Covid-positive patient in our unit, all attending physicians and nurses undergo a nasopharyngeal (NP) swab searching for SARS-CoV-2 RNA with the PCR *real time* method. Beginning with week 4, the body temperature is

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screened in healthcare professionals and patients undergoing a surgical/endoscopic procedure undergo a NP swab on the day of urgent surgery or on the day before if elective. If the test is negative, the procedure is performed as planned; if positive, chest x-ray and blood gas analysis are obtained and a risk assessment is discussed with the anesthesiologist and the patient for possible rescheduling. No swab is performed in case of an emergency procedure.

Outcomes

The outcomes investigated included: (1) surgical load, (2) rate of admissions and bed occupation, and (3) occurrence and rate of unrecognized Covid-positive patients in our Department. Data were compared with that of the same period of 2019 (March 11 to April 7, 2019).

RESULTS

Surgical Load

A 63% drop in elective surgical abdominal and 70% drop in endoscopic procedures occurred during the 4 weeks after the lockdown, as compared to same time lapse of 2019. Most of them were performed during week 1, due to unvaried operative planning right after the lockdown. From week 2, all abdominal surgery was performed via an open approach; laparoscopic and robotic procedures had to be abandoned due to issues related to the available operating rooms left. Only 16 urgent cases for obstructive uropathy or sepsis (n = 12), hematuria (n = 3), and renal trauma (n = 1) were performed with a 32% reduction.

Admissions and Bed Occupation

The rate of bed occupation decreased steadily from week 1 to week 4. The median number of occupied beds decreased from 21 (range 18-23) during week 1—similar to that of March 2019—to 8 (range 7-10) during week 4, with a 64% reduction. Beds were occupied by patients with complications from previous month' procedures and patients with urgent conditions, mainly urosepsis and hematuria. Overall admissions were 133 in March 2019 and 39 in March 2020, with a 71% drop.

Occurrence and Presentation of Covid Patients

Overall, 3 (8%) patients had unrecognized Covid disease out of 39 admitted to our Department during the time lapse considered (the first during week 1, the second during week 2, the third during week 3). All doctors and nurses attending these patients underwent a negative swab for Covid-19 RNA. The main data of Covid cases are listed in Table 1.

Patient 1. A 65 years old woman with a history of left partial nephrectomy presented with flank pain associated with a 5 mm stone of the right lower ureter: a double J stent was placed. On the day after discharge, the Patient developed fever, initially diagnosed as a septic complication of endoscopic treatment, and later on dyspnea associated with worsening of laboratory parameters. A NP swab confirmed the diagnosis of Covid-19. History revealed that the patient shared the waiting room of a medical facility with a person with cough 1 week prior to her admission.

Patient 2. An otherwise healthy 54 years old man presented with 39°C fever and cough and a 9 mm stone of the upper ureter with mild hydronephrosis at abdominal ultrasound: a double J stent was placed. Despite a negative swab for Covid-19 RNA, the patient had exertional dyspnea and 92% O_2 saturation throughout the hospital stay, worsened during the operation of stent placement and was considered highly suspicious. No exposure history was referred.

Patient 3. A 66 years old man with a history of radical prostatectomy and radiation therapy for a pT3b prostate cancer in 2005 was transferred from an outside hospital located in an area with high levels of community transmission for the worsening of recurrent hematuria associated with fever and diarrhea and a methicillin-resistant *Staphylococcus aureus* bacteremia. Chest x-ray was negative and saturation was 98%. Due to the rise of fever up to 38°C, a swab positive for Covid-19 RNA was performed, and the Patient transferred to an intermediate care Covid Department where his respiratory symptoms and parameters worsened.

DISCUSSION AND CONCLUSION

The destiny of many surgical departments during the Covid-19 pandemic throughout the world is to face a reduction of their clinical and surgical activity. Our Department experienced an exceptional reduction of 60%-70% of surgery, admissions, and bed occupation, following a 2-phase phenomenon. During week 1 after the lockdown, surgical loads were comparable to ordinary levels, due to the maintaining of scheduled oncologic cases. Beginning with week 2, a significant drop occurred as the pandemic was spreading in our Province. Even urgent urologic procedures had a 30% reduction, following the pattern observed with acute cardiovascular conditions, such as stroke[4] and myocardial infarction.[5] Most likely, patients' concerns of contracting COVID-19 lead to delays in seeking care in the hospital. A stricter medical selection to the admissions of deferrable conditions and the decrease of road traffic injuries might also have played a role.

Despite available recommendations and guidelines on surgical activity[6–8] and the implementation of telemedicine to improve screening and protection,[9] the risk of missing a Covid-infected patient in a Covid-free unit

Table 1. Characteristics of Covid patients at presentation

Sex	Age	Urologic	Other	$SatO_2$	cXr	PCR	PCT	WBC	PT	Swab
F	65	Flank pain Ureteral stone	39°C Dyspnea	84%	Pos	246	6.0	6000	1.35	Pos
M	54	Flank pain Ureteral stone	38°C Cough	92%	Neg	140	n.a.	8600	1.46	Neg
M	66	Hematuria S *aureus* +	38°C Diarrhea	98%	Pos	180	2.0	3600	1.45	Pos

CRP, C-reactive protein; cXr, chest x-rays; PCT, procalcitonin; PT, prothrombin time; $SatO_2$, oxygen saturation; WBC, white blood count.

remains high. In our experience, 8% of admitted patients after the lockdown were positive or highly suspicious for Covid. The cost of such misdiagnosis can be catastrophic, leading to further spread of the pandemic and to shortcoming and exhaustion of healthcare workers. Rocco reported the risk of overlapping or misinterpretation of Covid-19 symptoms with those of urosepsis, especially in patients with urological devices (ureteral stent or nephrostomic tube).[10]

The cases reported cover different scenarios of Covid having in common the admission to a Covid-free unit: symptomatic ureteral stones with onset of fever and respiratory symptoms before (case 1) or after ureteral stenting (case 2), hematuria associated with diarrhea and a *Staph aureus* bacteremia (case 3). Our experience highlights that Covid-19 infection may mimic or overlap to the symptoms and signs of urgent urologic conditions. Primarily, a fever associated to an unrecognized Covid can mislead the assessment of an uncomplicated urinary stone as a septic condition. The rise of both PCR and procalcitonin was not helpful in the differential diagnosis, as previously suggested.[10] Secondarily, although Covid-19 has been associated with a hypercoagulable state,[11] a prolonged PT is a common hematologic finding,[12] which might potentially worsen or prolong a hematuria due to an unrelated pre-existing condition.

A pragmatic and safe approach for health workers and patients would be that of performing a swab for Covid-19 on any patient admitted to or treated in a Covid-free unit. However, a rapidly spreading pandemic can lead to a shortage of resources and services, making it difficult to perform swabs systematically in a large portion of patients. It should also be reminded that NP swabs for SARS-CoV2 RNA have relatively low positive rates, ranging from 63% to 72% in the most severe infections, as compared to 93% in the bronchoalveolar lavage fluids.[13,14]

We propose to implement essential diagnostic measures such as swabs and serologic tests, where available, with an *enhanced triage* prior to the admission to a Covid-free unit. In order to identify potential cases as soon as possible, it should not be limited to routine questions on fever and respiratory symptoms but also include the following items:

Clinical Criteria

1. nonrespiratory symptoms related to Covid-19 (diarrhea and headache being among the most frequently reported),[11,15]
2. any symptom not directly related to the condition leading the patient to the hospital.

In general, any deviation from an expected hospital or postoperative course should prompt further investigation.

Epidemiological Criteria

1. history of exposure to other persons with respiratory symptoms, focusing on unprotected close contact;
2. survey about the social and geographic origin of the patient.

A detailed and updated map of Covid-19 clusters in the region where the unit is operating should be available and include hospitals, nursing homes, and other healthcare facilities, as well as residential areas with high levels of community transmission.[16]

A pandemic is a time- and resource-consuming process that poses an unprecedented challenge to any community or health system. Although a diagnostic delay has serious consequences, including increased mortality and nosocomial transmission, preventive measures and diagnostic tools are gradually implemented. The application of an *enhanced triage* is a simple and costless tool that should be incorporated into hospital protocol in order to preserve the integrity of a Covid-free unit.

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