



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



ORIGINAL ARTICLE

Assessment of trends and clinical presentation in the emergency department of patients with renal colic during the COVID-19 pandemic era[☆]



D.M. Carrion^{a,b}, G. Mantica^{b,c}, M. Antón-Juanilla M^d, K.H. Pang^{b,e}, S. Tappero^c, A. Rodriguez-Serrano^a, S. Parodi^c, V. Crespo-Atín^d, R. Cansino^a, C. Terrone^c, S. Nikles^{b,f,*}, J. Gomez Rivas^{a,b}, F. Esperto^{b,g}

^a Urology Department, La Paz University Hospital, Autonomous University of Madrid, Madrid, Spain

^b European Society of Residents in Urology (ESRU)

^c Department of Urology, Policlinico San Martino Hospital, University of Genova, Génova, Italy

^d Department of Urology, Cruces University Hospital, Barakaldo, Vizcaya, Spain

^e Department of Oncology and Metabolism, Academic Urology Unit, University of Sheffield, Sheffield, United Kingdom

^f Department of Urology, Sestre Milosrdnice University Hospital Centre, Zagreb, Croatia

^g Department of Urology, Campus Biomedico, University of Rome, Roma, Italy

Received 19 July 2020; accepted 22 August 2020

Available online 19 November 2020

KEYWORDS

COVID-19;
Renal colic;
Lithiasis;
Emergency
department

Abstract

Introduction: We hypothesized that the recent COVID-19 pandemic may lead to a delay in renal colic patients presenting to the Emergency Department due to the fear of getting infected. This delay may lead to a more severe clinical condition at presentation with possible complications for the patients.

Material and methods: Retrospective review of data collected from three institutions from Spain and Italy. Patients who presented to Emergency Department with unilateral or bilateral renal colic caused by imaging confirmed urolithiasis during the 45 days before and after each national lockdown were included. Data collected included patients' demographics, biochemical urine and blood tests, radiological tests, signs, symptoms and the therapeutic management. Analysis was performed between two groups, Group A: patients presenting prior to the national lockdown date; and Group B: patients presenting after the national lockdown date.

[☆] Please cite this article as: Carrion DM, Mantica G, Antón-Juanilla M M, Pang KH, Tappero S, Rodriguez-Serrano A, et al. Evaluación de las tendencias y presentación clínica de pacientes con cólico nefrítico que acuden al servicio de urgencias durante la era pandémica del COVID-19. Actas Urol Esp. 2020. <https://doi.org/10.1016/j.acuro.2020.08.006>

* Corresponding author.

E-mail address: sven.nikles@gmail.com (S. Nikles).

Results: A total of 397 patients presented to Emergency Department with radiology confirmed urolithiasis and were included in the study. The number of patients presenting to Emergency Department with renal/ureteric colic was 285 (71.8%) patients in Group A and 112 (28.2%) patients in Group B ($p < 0.001$). The number of patients reporting a delay in presentation was 135 (47.4%) in Group A and 63 (56.3%) in Group B ($p = 0.11$). At presentation, there were no statistical differences between Group A and Group B regarding the serum creatinine level, C reactive protein, white blood cell count, fever, oliguria, flank pain and hydronephrosis. In addition, no significant differences were observed with the length of stay, Urology department admission requirement and type of therapy.

Conclusion: Data from our study showed a significant reduction in presentations to Emergency Department for renal colic after the lockdown in Spain and Italy. However, we did not find any significant difference with the length of stay, Urology department admission requirement and type of therapy.

© 2020 Published by Elsevier España, S.L.U. on behalf of AEU.

PALABRAS CLAVE

COVID-19;
Cólicos nefríticos;
Cólicos renales;
Litiasis;
Servicio de urgencias

Evaluación de las tendencias y presentación clínica de pacientes con cólico nefrítico que acuden al servicio de urgencias durante la era pandémica del COVID-19

Resumen

Introducción: Nuestra hipótesis es que la pandemia por COVID-19, y el estado de alarma impuesto por los gobiernos, pueden haber retrasado las visitas a urgencias por cólicos nefríticos, debido al miedo a contagiarse en los centros sanitarios. Este atraso en acudir a los servicios de urgencias puede llevar a un empeoramiento clínico y aumentar las complicaciones relacionadas con la enfermedad o el tratamiento recibido.

Material y métodos: Realizamos una revisión retrospectiva de 3 centros hospitalarios en España e Italia. Fueron incluidos pacientes atendidos en el servicio de urgencias por cólico renal (unilateral o bilateral) secundario a litiasis confirmadas en pruebas de imagen durante los 45 días previos y posteriores a la declaración del estado de alarma de cada país. Se recolectaron datos demográficos, síntomas y signos de presentación, análisis de sangre y orina, pruebas de imagen, y manejo terapéutico. El análisis estadístico se realizó entre dos grupos, Grupo A: pacientes que acudieron antes de la declaración del estado de alarma y Grupo B: pacientes que acudieron tras la declaración del estado de alarma.

Resultados: Un total de 397 pacientes que acudieron a urgencias por cólicos nefríticos secundarios a litiasis fueron incluidos en el estudio, 285 (71,8%) en el Grupo A y 112 (28,2%) en el Grupo B ($p < 0,001$). Un total de 135 (47,4%) en el Grupo A y 63 (56,3%) en el Grupo B ($p = 0,11$) admitieron haber pospuesto su búsqueda de atención médica urgente. En el momento de la valoración inicial, no se encontraron diferencias entre ambos grupos en los niveles de creatinina sérica, leucocitosis, fiebre, oliguria, dolor, o hidronefrosis. Además, no se observaron diferencias en relación con la estancia media, ingreso en el servicio de urología, o necesidad de tratamientos invasivos.

Conclusión: Nuestros resultados muestran una disminución significativa de atenciones en urgencias por cólicos nefríticos tras la declaración del estado de alarma en España e Italia. A diferencia de otros estudios publicados recientemente, no encontramos diferencias en la estancia media, ingreso al servicio de urología, o necesidad de tratamientos invasivos en pacientes que se presentaron antes y después del estado de alarma.

© 2020 Publicado por Elsevier España, S.L.U. en nombre de AEU.

Introduction

On 31st December 2019, the Wuhan Municipal Health Commission in Wuhan City, Hubei province, China reported a cluster of 27 pneumonia cases of unknown etiology.¹ A novel severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) was identified from throat swab samples as the causative microorganism. The virus spread globally and on the 11th March 2020 the World Health Organization

declared the Coronavirus disease 2019 (COVID-19) a global pandemic. Strict containment measures have been taken by governments worldwide in attempt to control the virus dissemination, ranging from school closures, social distancing to complete lockdown.²

While hospitals were overloaded with COVID-19 patients, there has been a decrease in presentation to the Emergency Department (ED) with non-severely symptomatic, or non-life-threatening conditions, such as acute uncomplicated

renal colic.³⁻⁶ In the urological field, in some centers a significant reduction in access to some acute urological conditions, in particular for renal colic has been reported.^{7,8} While it is plausible that the lockdown may greatly decrease some pathologies such as trauma or infections, it is questionable that it can reduce the incidence of renal colic. The severity of renal colic and its associated complications vary, and ED may be presented with low-complexity cases resulting in abuse of hospital resources, that could have otherwise been managed by general practitioners. However, during the worse days of lockdown due to COVID-19 spread, there may be a worrisome delay in presentations due to patients' fear of getting infected in hospitals.

We aim to evaluate the impact of the COVID-19 pandemic on the number of patients attending ED with renal colic, possible delays in presentation and the severity of clinical condition in Institutions from two of the most affected European countries, Italy and Spain. We hypothesized that the recent COVID-19 pandemic may lead to a delay in renal colic patients presenting to ED due to the fear of getting infected. This delay may lead to a more severe clinical condition at presentation with possible complications for the patients and adding further burden on the healthcare systems both in terms of costs and hospital bed occupancy. These data could be of fundamental importance for "urological counseling" in view of possible further pandemic peaks in different European countries in the coming months.

Materials and methods

Study design

After Institutional Review Board approval (HULP: PI-4188) data were retrospectively collected from three institutions from two European countries (Genova, Italy and Madrid and Bilbao, Spain). The study period included 45 days preceding the official date of the lockdown (9th March 2020, Italy and 13th March 2020, Spain) and 45 days following the lockdown date: Italy, from 24th January to 25th April; Spain, 28th January to 29th April.

Inclusion, exclusion criteria and collected data

Patients who presented to ED with unilateral or bilateral renal colic caused by imaging confirmed urolithiasis during the 45 days before and after each national lockdown were included. Exclusion criteria were patients with flank pain not caused by urolithiasis, patients with Chronic Kidney Disease (CKD) > grade II according to "Kidney Disease: Improving Global Outcomes" (KIDGO) guidelines⁹ and patients with a solitary kidney.

Data collected included patients' demographics, biochemical urine and blood tests (creatinine, C-Reactive Protein [CPR], Procalcitonin, white blood cell count [WBC], urinalysis), radiological tests (CT-scan; ultrasonography and abdominal X-ray), signs, symptoms, clinical parameters (temperature, urine output) and the therapeutic management (admission to the ED for less or more than 24h, admission to urology department, admission to the intensive care unit, ureteral stent placement, nephrostomy placement, ureteroscopy).

A presentation after 24h of the onset of symptoms was considered a delay. The duration of delay was estimated from the time of experiencing symptoms to the day of presentation. Where data on delay was missing, patients were phone called and asked to reply to a short interview evaluating possible delays and its causes.

Statistical analysis

Data were initially entered into a Microsoft Excel (Version 14.0) database and were transferred to SPSS Statistics Version 26 for analysis. The dataset was divided into two different groups: Group A, patients presenting prior to the national lockdown date, and Group B, patients presenting after the national lockdown date. Demographic and clinical characteristics were expressed as the median with interquartile range (IQR) or as a count with percentage. Continuous parametric and non-parametric data were analyzed with Student's *t*-test and Mann-Whitney *U* test respectively. Categorical variables were analyzed with Chi-squared test. All statistical tests were two sided with the significance level set at 0.05.

Results

A total of 397 patients presented to ED with radiology confirmed urolithiasis and were included in the study (Table 1). The number of patients presenting to ED with renal/ureteric colic was 285 (71.8%) patients in Group A and 112 (28.2%) patients in Group B ($p < 0.001$). The number of patients reporting a delay in presentation was 135 (47.4%) in Group A and 63 (56.3%) in Group B ($p = 0.11$). Meanwhile the mean (SD) time of delay was 2.9 (3.5) days in Group A and 4.1 (4.5) days in Group B ($p = 0.24$). The median age (IQR) at presentation was 46 (36.0–57.7) years and 51 (38.0–58.0) years in Group A and Group B respectively ($p = 0.03$). The number of patients with confirmed COVID-19 was 3 (1.1%) in Group A and 12 (10.7%) in Group B ($p < 0.001$).

No differences were found regarding the localization of the stone in the ureter and the mean stone size. The number of patients presenting with stones <5 mm was 34 (44.7%) and 24 (63.2%) in Group A and Group B respectively ($p < 0.03$).

At presentation, there were no statistical differences between Group A and Group B regarding the serum creatinine level, CRP, WBC, fever, oliguria, flank pain and hydronephrosis. None of the patients were on medical expulsive therapy (MET) prior to presentation. In addition, no significant differences were observed with regards to the length of stay, Urology department admission requirement and type of therapy (ureteric stenting vs nephrostomy insertion vs MET) (Table 2).

Discussion

Here we report the incidence of urolithiasis and its associated clinical parameters at presentation and treatment outcomes 45 days before and after the date of lockdown in three major referral centers from two European countries that were severely affected by COVID-19. We hypothesized that the lockdown and COVID-19 outbreak would result in

Table 1 Demographics, baseline biochemical and radiological findings at presentation of 397 patients attending the emergency department for renal colic.

	Total	Pre-COVID era	Post-COVID era	p-value
Patients, n (%)	397	285 (71.8)	112 (28.2)	<0.001
Delay from symptoms, n (%)	198 (49.9)	135 (47.4)	63 (56.3)	0.11
Mean delay (SD)	3.3 (3.9)	2.9 (3.5)	4.1 (4.5)	0.24
Median delay (IQR)	2 (1–4)	2 (1–4)	3 (2–5)	
Baseline				
Age, median (IQR)	47 (37–58)	46 (36–57.5)	51 (38–58)	0.03
Sex, n (%)				
Males	208 (52.4)	132 (46.3)	55 (49.1)	
Females	189 (47.6)	153 (53.7)	57 (50.9)	0.24
BMI, median (IQR)	24.3 (22–26)	24.2 (22–26.1)	25 (23–26)	0.88
CCI, median (IQR)	0 (0–1)	0 (0–1)	0 (0–2)	0.73
Previous stones, n (%)	128 (32.2)	92 (32.3)	36 (32.1)	0.82
At presentation				
COVID-19+, n (%)	15 (3.8)	3 (1.1)	12 (10.7)	<0.001
Serum creatinine level, median (IQR)	0.91 (0.74–1.12)	0.90 (0.72–1.07)	1 (0.79–1.21)	0.08
Serum creatinine level, mean (SD)	1.04 (0.85)	0.96 (0.52)	1.23 (1.35)	
CRP, median (IQR)	2.9 (0.6–11.4)	2.9 (0.5–10.9)	3.5 (0.9–12.6)	0.38
CRP categorized, n (%)				
CRP < 10	272 (68.5)	199 (69.8)	73 (65.2)	
CRP ≥ 10	105 (26.4)	72 (25.3)	33 (29.5)	
Missing value	20 (5.1)	14 (4.9)	6 (5.3)	0.22
WBC, median (IQR)	9100 (7410–11 350)	8945 (7300–10 995)	9700 (7800–12 190)	0.71
WBC, mean (SD)	9713 (3866)	9330 (3170)	10 691 (5132)	
Fever < 37.5 °C, n (%)	37 (9.3)	29 (10.2)	8 (7.1)	0.23
Oliguria, n (%)	14 (3.5)	10 (3.5)	4 (3.6)	0.59
Flank pain, n (%)	258 (65)	186 (65.3)	72 (64.3)	0.47
Hydronephrosis ≥ II grade, n (%)	98 (24.7)	69 (24.2)	29 (25.9)	0.61
Already on antibiotics, n (%)	14 (3.5)	9 (3.2)	5 (4.5)	0.73
Already on exp. therapy, n (%)	0	0	0	–
Adm. to urologic dept., n (%)	46 (11.6)	34 (11.9)	12 (10.7)	
Length of stay, median (IQR)	0 (0–1)	0 (0–1)	0 (0–1)	0.44
Imaging tests findings				
Imaging CT-scan, n (%)	114	76 (26.7)	38 (33.9)	0.15
Ureteric stone, n (%)				
Single	102 (89.5)	67 (88.2)	35 (92.1)	
Multiple	12 (10.5)	9 (11.8)	3 (7.9)	0.08
Obstructive stone location				
Lower ureter	60 (52.6)	37 (48.7)	23 (60.5)	
Middle ureter	25 (21.9)	20 (26.3)	5 (13.2)	
Upper ureter	29 (25.5)	19 (25)	10 (26.3)	0.25
Stone size, mean (SD)				
Stone size categorized, n (%)	5.5 (3.9)	5.6 (4)	5.3 (3.6)	
<5 mm	58 (50.9)	34 (44.7)	24 (63.2)	0.54
5–9 mm	44 (38.6)	34 (44.7)	10 (26.3)	
>9 mm	12 (10.5)	8 (10.6)	4 (10.5)	0.03
Urinoma, n (%)	27 (23.7)	15 (9.7)	12 (31.6)	0.12

Legend: BMI: body mass index; CCI: Charlson comorbidity index; CRP: C reactive protein; WBC: white blood cells; IQR: interquartile range; SD: standard deviation.

a delay presentation of renal colic possibly secondary to fear of getting infected, leading to a more severe condition and potential complications. However, in our current analysis we did not identify any significant delays in presentation and the clinical outcome did not differ between the 45-day period before and after the lockdown date. We observed a

decrease in number of ED presentations following lockdown, 112 (28.2%) versus 285 (71.8%) prior to lockdown. The reduction in urolithiasis in the COVID-19 period was also observed in Antonucci et al.'s study⁸ which compared the number of ED admission in Rome between March and April 2020 with the same period in 2019 and identified a 48.8% reduction. Fear of

Table 2 Treatment and management of 397 patients attending the emergency department for renal colic.

	Total	Pre-COVID era	Post-COVID era	p-value
<i>Treatment</i>				
Patients, n (%)	397	285 (71.8)	112 (28.2)	<0.001
Expectant therapy, n (%)	106 (26.7)	82 (28.8)	24 (21.4)	0.09
Antibiotic therapy, n (%)	99 (24.9)	72 (25.3)	27 (24.1)	0.46
Ureteral stenting, n (%)	32 (8.1)	25 (8.8)	7 (6.3)	0.27
Urgent nephrostomy, n (%)	5 (1.3)	3 (1.1)	2 (1.8)	0.44
Urgent ureteroscopy, n (%)	9 (2.3)	7 (2.5)	2 (1.8)	0.73
ICU management, n (%)	0	0	0	-
Death, n (%)	0	0	0	-

Legend: ICU: intensive care unit.

acquiring COVID-19 is considered one of the key factors for avoiding or delaying ED visits.^{6,10} Another explanation could be that patients contacted emergency medical services via telephone, and due to the overloaded ambulance and ED services, patients were advised to stay home with over the counter analgesics and only attending ED if they presented with fever or uncontrolled pain.¹¹⁻¹⁴

More patients delayed their presentation during the COVID-19 era (Group B), 56.3% versus 47.4% (Group A), but this did not reach statistical significance. A reason why a delay in presentation was not observed in this cohort of patients is possibly due to the nature of renal colic. Renal colic can cause immense pain, described as worse than childbirth¹⁵ and may be difficult to tolerate.

The presenting age was significantly higher in the post lockdown group which could be explained with fear of having a more serious condition and a lower pain threshold in older patients. There were no statistical differences in presenting clinical parameters including signs and symptoms, vitals, WBC, CRP, serum creatinine levels, stone location, hydronephrosis. In addition, the surgical intervention and type of intervention such as ureteric stenting, nephrostomy insertion or primary ureteroscopy did not differ amongst the two groups. Our finding is different to Antonucci et al.,⁸ who showed that the patients admitted to ED between March and April 2020 had more complications, more frequently needing hospitalization and early stone removal was preferred over urinary drainage compared with the same period in 2019. This could be explained by the different time periods studied. We compared 45 days before and after the lockdown date during the COVID-19 outbreak, whilst Antonucci et al.⁸ compared a non-pandemic period in 2019 with the peak time of the outbreak in Italy. Our results are more consistent with Flammia et al.¹⁶ who reported their experience with diagnostic and therapeutic procedures for urinary stones during the outbreak in March-April 2020 and the same period in 2019. They showed no significant differences detected in terms of complication rates, urinary stone size, grade of hydronephrosis and intervention rate and type of intervention (nephrostomy or ureteric stenting).¹⁶

We identified more COVID-19 positive patients in the post-lockdown group and this might be due to the increase in swab tests performed. In particular, swab testing in ED was mandatory in Italy and Spain shortly after lockdown.

Whilst most if not all European countries have got COVID-19 under control and have derived triaging, per-

sonal protective equipment and redeployment protocols to manage the disease,¹⁷ we are in a better more experienced position to tackle a second outbreak if this were to occur. However, to prevent unnecessary admission utilizing hospital resources and exposing patients to the risk of COVID-19, treatment can be delayed for asymptomatic and non-obstructing stones, and emergency interventions reserved for septic patients, solitary kidneys and obstructing stones.¹⁸

The potential limitation of our study is the relatively low number of patients. This could be expected because the three centers involved in this study were greatly impacted by the high number of COVID-19 patients that reduced the overall number of ED admissions.

Conclusions

Data from our study showed a significant reduction of presentations to ED for renal colic after the lockdown in Spain and Italy. Patients' fear to get infected, telematic triage and further public health plans may be responsible for this trend. However, we did not identify any significant difference with the length of stay, Urology department admission requirement and type of therapy.

Conflict of interest

The authors declare that they have no conflict of interest.

References

1. WHO statement regarding cluster of pneumonia cases in Wuhan, China [Internet]. World Health Organization; 2020. Available from: <https://www.who.int/china/news/detail/09-01-2020-who-statement-regarding-cluster-of-pneumonia-cases-in-wuhan-china> [accessed 29.03.20].
2. Wilder-Smith A, Freedman D. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J Travel Med.* 2020;27, <http://dx.doi.org/10.1093/jtm/taaa020>.
3. Tam CF, Cheung KS, Lam S, Wong A, Yung A, Sze M, et al. Impact of coronavirus disease 2019 (COVID-19) outbreak on ST-segment-elevation myocardial infarction care in Hong Kong, China. *Circ Cardiovasc Qual Outcomes.* 2020;13:e006631.

4. Lazzerini M, Barbi E, Apicella A, Marchetti F, Cardinale F, Trobia G. Delayed access or provision of care in Italy resulting from fear of COVID-19. *Lancet Child Adolesc Health*. 2020;4:e10–1.
5. De Filippo O, D'Ascenzo F, Angelini F, Bocchino PP, Conrotto F, Saglieto A, et al. Reduced rate of hospital admissions for ACS during Covid-19 outbreak in Northern Italy. *N Engl J Med*. 2020;383:88–9.
6. Mantica G, Riccardi N, Terrone C, Gratarola A. Non-COVID-19 visits to emergency departments during the pandemic: the impact of fear. *Public Health*. 2020;183:40–1.
7. Mantica G, Suardi N, Terrone C. Re: Ming-Chun Chan, Sharon E.K. Yeo, Yew-Lam Chong, Yee-Mun Lee. Stepping Forward: Urologists' efforts during the COVID-19 Outbreak in Singapore. *Eur Urol*. 2020;78:e42.
8. Antonucci M, Recupero SM, Marzio V, De Dominicis M, Pinto F, Foschi N, et al. El impacto de la COVID-19 en las admisiones al servicio de urgencias, hospitalizaciones y manejo clínico de la urolitiasis en el centro de Italia: análisis multicéntrico. *Actas Urol Esp*. 2020, <http://dx.doi.org/10.1016/j.acuro.2020.06.005>.
9. Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. *Kidney Int*. 2013;3 Suppl.:1–150.
10. Matthewson J, Tiplady A, Gerakios F, Foley A, Murphy E. Implementation and analysis of a telephone support service during COVID-19. *Occup Med (Lond)*. 2020;70:375–81.
11. Cervino G, Oteri G. COVID-19 pandemic and telephone triage before attending Medical Office: problem or opportunity? *Medicina (Kaunas)*. 2020;56:250.
12. Judson TJ, Odisho AY, Neinstein AB, Chao J, Williams A, Miller C, et al. Rapid design and implementation of an integrated patient self-triage and self-scheduling tool for COVID-19. *J Am Med Inform Assoc*. 2020;27:860–6.
13. Casas RS, Cooper JL, Hempel EV. COVID-19 risk triage: engaging residents in telephonic screening. *Med Educ*. 2020;54:670.
14. Miah S, Gunner C, Clayton L, Venugopal S, Boucher NR, Parys B. Renal colic and childbirth pain: female experience versus male perception. *J Pain Res*. 2017;10:1553–4.
15. Flammia S, Saliccia S, Tufano A, Busetto GM, Ricciuti GP, Sciarra A. How urinary stone emergencies changed in the time of COVID-19? [published online ahead of print, 2020 May 28]. *Urolithiasis*. 2020:1–3, <http://dx.doi.org/10.1007/s00240-020-01198-3>.
16. Ribal MJ, Cornford P, Briganti A, Knoll T, Gravas S, Babjuk M, et al. European Association of Urology Guidelines Office Rapid Reaction Group: An Organisation-wide Collaborative Effort to Adapt the European Association of Urology Guidelines Recommendations to the Coronavirus Disease 2019 Era. *Eur Urol*. 2020;78:21–8.
17. Proietti S, Gaboardi F, Giusti G. Endourological stone management in the Era of the COVID-19. *Eur Urol*. 2020;78:131–3.