

The urological practice and contribution to the general health system of the EBU accredited urology clinic during the first month of COVID-19 pandemic: An analysis from a tertiary center declared as a national COVID-19 pandemic hospital in Turkey

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ABSTRACT

Objective: This study aims to evaluate the overall healthcare performance of our re-organized urology clinic during the COVID-19 pandemic in Turkey.

Material and methods: A retrospective review of our department data was conducted between March 20, 2020, and April 16, 2020. All consecutive patients who received healthcare in both urology and emergency COVID-19 clinics by urologists during this period were included. We classified our healthcare into 4 categories: 1) Standard urological outpatient clinic procedures, 2) Urological emergency procedures, 3) Standard inpatient treatment clinic procedures and specific inpatient treatment clinic procedures for COVID-19 suspected cases, and 4) Specific emergency clinic procedures for COVID-19. Epidemiologic data and patient characteristics were analyzed using independent t test and chi-square test.

Results: Overall, the data of 990 patients were evaluated. Of these patients, 344 were seen in standard urology outpatient clinic and 212 were transferred from COVID-19 emergency clinic and hospitalized because of suspected COVID-19 infection. In the COVID-19 emergency clinic, 361 patients were seen by urologists in different shifts. Our workload was on behalf of COVID-19 cases. In our COVID-19 experience, there were no statistically significant differences between our suspected and confirmed COVID-19 patients in terms of mean age, sex and age periods ($p=0.30$, $p=0.77$, and $p=0.78$, respectively).

Conclusion: We successfully contributed to the national COVID-19 management program. In our opinion, each department should create a customized action plan instead of a standardized approach during the COVID-19 pandemic or potential public emergencies in the future.

Keywords: Coronavirus; healthcare; hospital urology department; outcome and process assessment; pandemics.

Introduction

At the end of 2019, a case series of clinical viral pneumonia with unknown etiology was described in Wuhan, China.^[1] Molecular deep sequencing analysis from the patients' lower respiratory tract samples identified a novel betacoronavirus called 2019 novel coronavirus (SARS-CoV-2) as the causative pathogen.^[2] As time progressed, 2019-nCoV infected thousands and spread overseas. On March 11, 2020, the World Health Organization (WHO) named the disease caused by the SARS-CoV-2 as "COVID-19" and declared it a pandemic,

with 114 countries involved and with more than 118,000 cases and over 4000 deaths.^[3]

Although the COVID-19 pandemic crisis is de-escalating currently, it has already strained the health systems worldwide. As coronavirus continues to spread, healthcare workers and healthcare systems are facing a multitude of challenges at all stages of the pandemic.^[4] Therefore, providing an optimal health force, reasonable appointment of healthcare workers with strategic shifts, and/or cancelling non-essential events is imperative.^[5,6] As a result, sustaining the routine healthcare services dur-

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ing the pandemic has posed a great challenge to national health systems. Most of the health authorities have rearranged their health system, including hospitals, hospital departments, and healthcare workers.^[7,8]

In Turkey, the national health authority, Turkish Ministry of Health, has also designated an action plan by declaring all national and private hospitals that carry out the predefined requirements as pandemic centers. In addition to the national action plan, all pandemic centers, their departments, and healthcare workers have organized their local action plan against COVID-19. As well as any others, our urology department also generated an action plan and underwent a comprehensive reorganization.

In this article, we aimed to evaluate the overall healthcare performance of our European Board of Urology (EBU) accredited urology clinic by analyzing its standard urological workload and contribution to the general health system during the COVID-19 pandemic in Turkey.

Material and methods

A retrospective review of our department data was conducted, and the Institutional Review Board approved the study (Approval date: 15.05.2020, Approval ID: 2020.05.1.08.040). Written informed consent was not obtained from patients because of the retrospective data analysis nature of the study. The Turkish Ministry of Health also approved the study. Data of all consecutive 990 patients who were admitted to our pandemic center and received healthcare in the urology department or in the emergency COVID-19 clinic by urologists between March 20, 2020, and April 16, 2020, were evaluated. We classified our healthcare into 4 categories: 1) standard urological outpatient clinic procedures, 2) urological emergency procedures, 3) standard inpatient treatment clinic procedures and specific inpatient treatment

Main Points:

- A total of 344 patients were seen in the standard urology outpatient clinic of our department during the first month of the COVID-19 pandemic in Turkey.
- A total of 212 suspected COVID-19 cases were transferred from COVID-19 emergency clinic and hospitalized in our inpatient clinic.
- In the COVID-19 emergency clinic, 361 patients were seen by our urologists in different specific shifts.
- Our workload was on behalf of COVID-19 cases during the first month of COVID-19 pandemic in Turkey.
- Our opinion is that each department should create a specific action plan instead of a standardized approach during the COVID-19 pandemic or potential public emergencies in future.

clinic procedures for COVID-19 suspected cases, and 4) specific emergency clinic procedures for COVID-19. The suspected COVID-19 cases were diagnosed and characterized according to the national COVID-19 guidelines which were first published on February 25, 2020, and updated regularly with the evolving evidence by Directorate General for Public Health of the Turkish Ministry of Health.^[9-12]

The patients were treated according to the algorithms of our national COVID-19 guidelines^[9-12], and close and regular consultations with infectious diseases and clinical microbiology and pulmonology specialists were done during the management of suspected COVID-19 cases. The treatment algorithms were reviewed with every updated version of the COVID-19 guideline (Figure 1).

Data of the provided healthcare were evaluated separately for all categories. The parameters for type of healthcare and the total and daily number of patients in the urology outpatient clinic and in the emergency clinic for COVID-19 were extracted from our medical records. The number of total and daily hospitalizations and

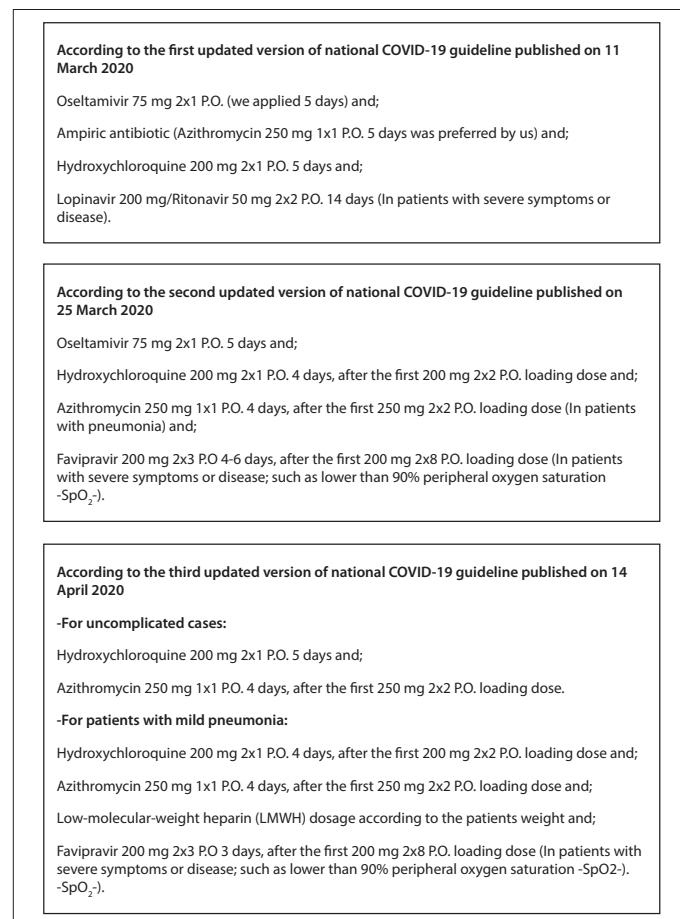


Figure 1. Treatment algorithms for cases of suspected COVID-19 in our inpatient treatment clinic

discharges, duration of hospital stay, and outcomes or treatment results were also extracted from our medical records. Characteristics of the patients such as age, sex, age periods according to the WHO guidelines,^[13] and comorbidity were also described. Outcomes of our COVID-19 suspected patients statistically compared between the sexes in terms of potential sex differences. Comparisons between age and age groups were also done.

Statistical analysis

Statistical analysis was performed with Statistical Package for the Social Sciences version 22.0 statistic software package (IBM SPSS Corp.; Armonk, NY, USA). Data distributions and test of normality were evaluated with Shapiro-Wilk test. Descriptive statistic methods (mean±standard deviation) were used to evaluate data. Independent t test and chi-squared test used for the comparison of normally distributed parametric and nonparametric data, respectively. Differences were considered significant at $p<0.05$ and 95% confidence interval.

Results

The diagnosis of the first COVID-19 case was reported on March 11, 2020, in Turkey. A few days later, the Turkish Ministry of Health designed an action plan for the COVID-19 pandemic. All public and private hospitals having at least 2 of the 3 predefined specialties, namely infectious diseases and clinical microbiology, pulmonology, and internal medicine, and third level intensive care unit were declared as pandemic centers on March 20, 2020. Within the same day, our urology department was declared as a pandemic clinic by the hospital administration and started to accept patient admissions of suspected COVID-19 cases. Before accepting the patients with suspected COVID-19, we re-organized our inpatient treatment clinic and initiated an employee training program. The number of beds within the inpatient facility was decreased to 29 from the regular number of 31 within the pandemic precautions. As of April 16, 2020, none of our healthcare providers, who consisted of 3 professors, 2 associate professors, 6 urologists (2 of them EBU certified), 11 residents, 13 nurses, 1 biologist, and 13 allied health personnel, have been diagnosed with COVID-19.

During the given period, all face-to-face lectures and surgical training activities were postponed. The work shifts during the pandemic period were designed as follows: 1 urologist in outpatient and inpatient facilities for 8 and 24 hours, respectively; 2 residents in the inpatient treatment clinics for 24 hours; and 3 nurses in the inpatient treatment clinics for 8 hours morning shift and 2 nurses in inpatient treatment clinics for 16 hours night shift. In addition, there were 2 to 3 allied health personnel in the outpatient and inpatient treatment clinics for 8 hours morning shift, and 2 allied health personnel in inpatient treatment clinics for 16 hours night shift. Seven urologists worked in the COVID-19 emergency clinic as well. We performed the treatment and follow-up of patients with suspected COVID-19 in our inpatient treatment clinic. Emergency healthcare for urological emergencies were provided in an isolated inpatient treatment clinic.

Within the urology outpatient clinic, 344 patients both with and without electronic appointments as well as control and consulted patients were seen. Of the available 406 urology appointments, 283 (69.7%) of them were filled up by the patients, whereas only 192 (67.8%) patients applied to the hospital. In addition, 152 patients including those without an appointment as well as control patients and/or consulted patients were also seen within the outpatient clinic. Of the 344 patients, 282 (81.9%) were male and 62 (%18) were female. The mean age was 50.80 ± 18.34 years. The mean ages were 51.54 ± 17.81 and 47.45 ± 19.46 years in males and females, respectively ($p=0.058$). The numbers of control patients, patients who received intravesical Bacillus Calmette-Guérin (BCG) induction treatment for bladder cancer, and consulted patients were 33, 7, and 4, respectively. Detailed information is provided in Table 1 and Figure 2.

All the consulted patients were urological emergencies including gross hematuria, penetrating scrotal trauma, and blunt and penetrating renal traumas. All the patients were hospitalized and treated within an isolated inpatient clinic. Table 2 summarizes the diagnosis and treatment protocols of patients admitted to the emergency department.

Table 1. Data of our outpatient clinic during the pandemic period as of April 16, 2020

Parameters	New urological examinations (n=311)	Control examinations (n=33)	Patients who received BCG induction treatment for bladder cancer (n=7)	Consulted patients (n=4)
Mean age (years)	50.76 ± 18.18	51.15 ± 18.24	59.71 ± 7.40	26.00 ± 7.07
Sex (male/female)	256/55	26/7	5/2	3/1
Mean age for males (years)	51.38 ± 17.95	53.03 ± 16.73	59.80 ± 8.19	29.33 ± 2.88
Mean age for females (years)	47.87 ± 19.15	44.14 ± 23.14	59.50 ± 7.77	16

BCG: Bacillus Calmette-Guérin

Table 2. Data of our inpatient treatment clinic during the pandemic period until April 16, 2020

Parameters	Hospitalized emergency patients* (n=4)	Hospitalized patients with suspected COVID-19 (n=212)
Mean age (years)	26.00±7.07	55.43±17.47
Sex (male/female)	3/1	114/98
Mean hospital stay (days)	2±0.54 (1-4)	4.47±3.34 (1-19)
Treatment	Conservative treatment with continuous bladder irrigation for gross hematuria caused by bladder lesion. Conservative treatment for grade 4 blunt (segmental parenchymal ischemia) and penetrating renal traumas caused by fall and harp object injury, respectively. Emergency scrotal exploration (with no pathologic finding) for penetrating scrotal trauma with low-velocity gunshot injury.	The patients were treated according to the national COVID-19 guidelines.
Outcomes, as of April 16, 2020	Patient with bladder lesion was discharged of her own accord. Patient with grade 4 blunt renal trauma was transferred to ICU because of pulmonary embolus. Patient with grade 4 penetrating renal trauma was treated uneventfully and discharged on the 4 th day. Patient who underwent scrotal exploration was transferred to orthopedics clinic because of the concomitant lower extremity injury.	A total of 74 male and 65 female patients were discharged after successful treatment. All of them were already suspected COVID-19 patients. Their molecular test results followed-up by national Directorate General for Public Health. A total of 54 (28 male and 26 female) patients were transferred to specific COVID-19 inpatient treatment clinics after the confirmation of COVID-19 molecular diagnosis. Out of 54 confirmed COVID-19 patients, 14 men and 18 women were discharged after a mean of 4.07±2.43 and 4.05±1.95 days of treatment, respectively. However, 7 men and 5 women was already under the active treatment. Treatment in ICU was required for 10 (7 men and 3 women) patients. A total of 22 suspected COVID-19 patients (14 men, 8 women) was already under the active treatment at our department.
Emergency patients transferred to ICU* (n=1)		Suspected COVID-19 patients transferred to ICU (n=10)
Mean age (years)	31	69.22±14.26
Sex (male/female)	Male	7/3
Mean hospital stay in ICU, as of 16 April 2020 (days)	4	6.11±6.52
Mean hospital stay before transfer to ICU (days)	2	3.60±3.86
Outcomes, as of April 16, 2020	Discharged.	Of 10 patients, 3 men died in the ICU during their treatment: A 54-year-old male patient who had no comorbidity died on the 13th day in the ICU. An 87-year-old male patient who had DM, HT, and CKD died on the 2nd day in the ICU. A 60-year-old male patient who had no comorbidity died on the 1st day in the ICU. The remaining 7 patients (4 men, 3 women) had already been under treatment in the ICU with a mean of 6.00±6.58 days.

*All the emergency cases were evaluated in terms of COVID-19 with blood analysis and oropharyngeal swab PCR tests. None of them were diagnosed with COVID-19.
COVID-19: Coronavirus disease 2019; ICU: intensive care unit; DM: diabetes mellitus; HT: hypertension; CKD: chronic kidney disease

During the study period, 212 patients were hospitalized because of suspicion of COVID-19 infection. Of these patients,

114 (53.7%) were male and 98 (46.2%) were female. The mean age was 55.43±17.47 years. The mean ages were 55.79±16.78

Table 3. Mean age, sex, and age period characteristics of the suspected COVID-19 cases and confirmed COVID-19 patients

Parameters	Cases of suspected COVID-19 (n=157)	Patients with confirmed COVID-19 (n=54)	p
Mean age (years)	54.73±17.79	57.50±16.66	0.30*
Sex			
Male (n, %)	85, 54.1%	28, 51.9%	0.77#
Female (n, %)	72, 45.9%	26, 48.1%	
Age periods			
Adolescent (n, %)	1, 1.9%	8, 5.1%	0.78#
Young (n, %)	12, 22.2%	41, 26.1%	
Middle age (n, %)	19, 35.2%	48, 30.6%	
Elderly age (n, %)	14, 25.9%	35, 22.3%	
Senile age (n, %)	8, 14.8%	23, 14.6%	
Long livers (n, %)	0, 0.0%	2, 1.3%	

*Independent t test, # chi-squared test. COVID-19: Coronavirus disease 2019

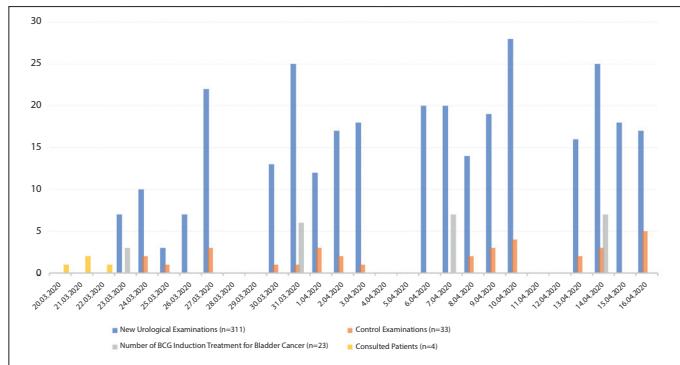


Figure 2. Daily examined patient numbers in our outpatient clinic during the pandemic period, as of 16 April 2020

and 55.01 ± 18.31 years in males and females, respectively ($p=0.61$). The mean duration of hospital stay was 4.47 ± 3.34 days. For male and female patients, the hospitalization duration was 4.51 ± 3.56 and 4.42 ± 3.09 days, respectively ($p=0.16$). The number of patients hospitalized and discharged/transferred to a different department within the hospital per day were 8.15 ± 4.21 and 7.56 ± 4.43 , respectively. A 73-year-old male patient with diabetes mellitus and end stage chronic kidney disease died on his second hospitalization day. A few days later, his test results confirmed COVID-19. As of April 16, 2020, we had 22 patients with suspected COVID-19 (14 male and 8 female), and 7 treatment units were being prepared for new patients with suspected COVID-19 waiting for hospitalization. We established 54 patients with a final diagnosis of COVID-19 according to the molecular test results. After the confirmation of COVID-19, all the patients were transferred to COVID-19 departments or intensive care units (ICU) depending on their overall health status for further treatment. Of them, 28 (51.8%) were male and 26 (48.1%)

were female. The number of patients transferred to the COVID-19 departments and ICU were 44 (81.4%) and 10 (18.5%), respectively. Among them, 12 and 7 patients were still receiving treatment in the COVID-19 departments and ICU, respectively, as of April 16; 3 patients died during the treatment in ICU, and 1 patient was lost to follow-up as he was transferred to the ICU of an external pandemic center. Detailed information is provided in Table 2.

Overall, 361 patients were seen in the COVID-19 emergency clinic by the urology team during different specific shifts. Of them, 203 (56.2%) were male and 158 (43.7%) were female. The mean age of the 361 patients was 39.21 ± 15.02 years, and the mean ages were 38.71 ± 14.68 and 39.84 ± 15.48 years in males and females, respectively ($p=0.49$). The average number of patients seen in one shift was 51.28 ± 39.59 .

After the comparison of groups, we found no statistically significant difference between patients with suspected COVID-19 and confirmed COVID-19 in terms of mean age, sex, and age periods (Table 3).

Discussion

According to the WHO's Situation Report-87, as of April 16, 2020, the epidemic has affected up to 2 million people with 1,991,562 confirmed cases and caused 130,885 deaths worldwide.^[14] The pandemic has led to a global panic with unprecedented measures taken by the governments to prevent the spread of COVID-19. These measures are commonly associated with social life, such as confining citizens to their homes, closing schools and universities, altering some business opera-

tions, banning international and/or national travel, and canceling or postponing mass gatherings.^[15,16] The postponing of national and/or international medical conferences was one of these measures associated with the health sector. Nevertheless, more strict measures are also required and have been taken associated with health systems.^[17] Global strict healthcare measures to prevent the spread of and to overcome COVID-19 consist of the suspension of all non-urgent elective surgeries and the limitation of inpatient and outpatient treatment services and clinics to increase the capacity of critical care and healthcare workers.^[16-19] In this regard, the optimal reorganization of hospitals and healthcare workers was a critical issue. Along with other health departments and clinics, most of the urology departments have determined a roadmap during the pandemic.^[8]

We also re-organized the working process of our department. Instead of our usual practice, we generated an optimal working schedule to maintain urological healthcare while fighting the COVID-19 synchronously. Our results revealed that we did not perform any urgent urological surgeries such as onco-urologic procedures besides elective surgery. We directed the relatively urgent onco-urologic cases to suitable non-pandemic centers. In the beginning, we only considered emergency cases, such as emergency scrotal exploration for penetrating scrotal trauma. The other emergency cases were managed with conservative treatment, as described in the results section. However, some urological journals recommended performing interventions for genitourinary cancers in their special blogs (i.e., the BJU International) or webpages (i.e., COVID-19 resources webpage of the European Urology) during the COVID-19 pandemic.^[20]

The first case of COVID-19 in Turkey was reported approximately 2 months after it was reported in Europe. The first 3 cases and death were reported on January 24, 2020, and on February 15, 2020, in France. As of February 21, 2020, 9 countries had reported their first cases.^[21] However, the disease rapidly spread and induced a large outbreak in Europe, particularly in Italy, Spain, France, and the United Kingdom. Turkey kept a close eye on the clinical course of COVID-19, the articles published about COVID-19, and the impact of the pandemic on health systems. We took into account the relatively bad experiences of the European countries and decided to take stricter measures, including delaying onco-urologic surgeries in our department at the beginning of the pandemic. We considered the fact that hospital personnel including caregivers, support staff, administration, and preparedness teams could be stressed out by the challenges of a prolonged response to COVID-19 as in other countries.^[22] As the number of COVID-19 cases exceed the capacity of our hospital, the risk of disease spread among the healthcare workers becomes another potential challenge. Therefore, right at the outset, we decided to use our medical resources and manpower cautiously. We referred our onco-urologic cases requiring mul-

tidisciplinary management and sometimes ICU management to more suitable centers. The patients with cancer are highly susceptible to infectious disease compared with the general population, with a 3.5 fold increased risk of COVID-19-related serious events (39% versus 8%, p=0.0008). Factors including ICU admission, requirement for mechanical ventilation, death due to immunocompromised state related to the nature of malignancy, and the anti-cancer management chemotherapy, radiotherapy, or surgery^[23,24] were the other considered reasons for us to postpone and refer the onco-urologic cases. However, some expert panels have generated guidelines for the urological practice during COVID-19 pandemic, and they suggest performing the onco-urologic urgent procedures.^[20,25] As with all guidelines, these recommendations must be tailored to locally available resources and situations. These opinions are preliminary expert suggestions from some groups, and by no means should these recommendations be considered rigid or all encompassing. The preliminary evidence and opinions may just be a point for discussion at a local level and can be used as a framework for urology departments in creating their own specialty-specific working plan, instead of using it as a strict criteria. We think that the major concern facing most of the clinicians and medical specialties is how to prioritize patients who need treatment for emergency conditions not related to COVID-19. Management of care and risk stratifying patients is complex during public emergencies. In our opinion, ethical rules and care rationing scenarios should be considered in the COVID-19 pandemic. We preferred to perform only emergency procedures at first and then to re-determine our strategy according to the course of the pandemic in Istanbul city and Turkey. Instead of rushed medium-scaled measures, sound judgements after active surveillance were more rational. It is definitely better to treat all the oncologic cases after the pandemic is under control in a short period than to treat a limited number of oncologic cases during the uncontrolled and prolonged pandemic period. Moreover, a prolonged pandemic may cause a devastating collapse of the health system through an abnormal backlog of oncologic cases. In our practice during the period, we used our resources including healthcare workers, equipment including mechanical ventilators, and hospital and ICU capacity through postponing and referring major onco-urologic procedures. Thus, we contributed effectively to the local management of COVID-19 pandemic in Turkey. As of April 16, 2020, the total confirmed number of COVID-19 cases and deaths were 69392 and 1518, respectively in Turkey.^[26] We used the trusted data of ouworldindata.org database^[26] to compare the COVID-19 epidemics between Turkey, France, Italy, Russia, Spain, United Kingdom, and United States. As of April 16, 2020, the total confirmed number of COVID-19 cases and deaths were 69392 and 1518, 106206 and 17167, 165155 and 21647, 24490 and 198, 181504 and 18893, 98476 and 14195, and 639644 and 30985, respectively, for these countries. These findings reveal that the death rate was lower in Turkey than in

the other countries. Furthermore, our lower death rate was seen while there was a similar rate of increase in confirmed COVID-19 cases as that of other European countries. This implies that we successfully managed the pandemic in our country. We think that our clinical approach and similar local approaches in Turkey might have contributed the Turkey's successful management of COVID-19 pandemic.

Our study has some limitations, including the lack of data about the referred onco-urologic cases and their outcomes. We have no information about their follow-up and oncologic results, including cure status or progression rates. We did not perform an exact comparison between the countries in terms of epidemiologic data of COVID-19. We did not compare the surgical case numbers of different countries or departments, either. Both of these are quite difficult to obtain in the current pandemic scenario.

In conclusion, our opinion is that each department should create a specific course of action plan instead of a standardized approach during the COVID-19 pandemic or potential public emergencies in the future. We think that the main point should be local status and severity of the public emergency. Departments should consider their medical resources, manpower in terms of healthcare workers, and opportunities while planning specific responses in an emergency.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Bağcılar Training and Research Hospital (Approval date: 15.05.2020, Approval ID: 2020.05.1.08.040).

Informed Consent: Written informed consent was not obtained from patients because of the retrospective data analysis nature of the study.

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Author Contributions: Concept – M.Z.T., E.Y.; Design – M.Z.T., E.Y.; Supervision – E.K., A.S., A.Y.M.; Data Collection and/or Processing – M.Z.T.; Analysis and/or Interpretation – M.Z.T.; Literature Search – M.Z.T., E.K., A.S., A.Y.M.; Writing Manuscript – M.Z.T., E.Y.; Critical Review – E.K., A.S., A.Y.M.

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Conflict of Interest: The authors have no conflicts of interest to declare.

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