Comparative Analysis of Admissions for Bladder Cancer before and During Covid-19 Pandemia

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ABSTRACT

Introduction and Objectives. The COVID-19 pandemic for which no healthcare system has been fully prepared has affected the management of cancer patients. We aimed to analyze the impact of the COVID-19 pandemic wave on patients with bladder tumors.

Materials and Methods. We retrospectively analyzed the patients who presented to the Iasi Urological Clinic before and during the Covid 19 pandemia with the diagnosis of bladder cancer.

Results. Between November 1, 2018 - February 28, 2020 (group A) vs. March 1, 2020 - June 30, 2021 (group B). A total of 888 patients have been included, 549 in group A and 339 in group B, mean age 69.45 years, SD +/- 9.89. There was no difference regarding mean age or gender between groups. Anemia (serum hemoglobin: 12.86 vs. 12.26 g/dl, p=0.003) and inflammatory syndrome (mean C-reactive protein level 8.86 vs. 11.22 mg/l, p=0.02) was more common in group B. Muscle invasive bladder cancer was more frequent in group B (p=0.001). Length of hospital stay was shorter during the pandemic because of the associated increased risk of patient exposure for every extra day.

Conclusions. Given their higher susceptibility to the novel coronavirus infection and a higher potential for developing perioperative complications due to tumor-induced immunosuppression, the patients with bladder cancer, are at high risk for adverse disease progression.

Key-words: bladder cancer, covid-19 pandemic, immunosuppression

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INTRODUCTION AND OBJECTIVES

The COVID-19 pandemic is one of the deadliest pandemics in recent history, causing at the time this article was written the death of over five million people worldwide, according to Johns Hopkins University. Because this virus spreads very rapidly, many economic and social activities were heavily affected, Also, access to healthcare services has been restricted to major emergencies1 in anticipation of a demand surge for hospital beds attributed to the coronavirus patients.

This health crisis, for which no healthcare system has been fully prepared, has put enormous pressure on the healthcare system, directly and indirectly affecting the disease progression and treatment of cancer patients[2].

We aimed to analyze the impact of the COVID-19 pandemic wave on patients with bladder tumors who presented to the Iasi Urological Clinic before and during the pandemic, for similar time periods.

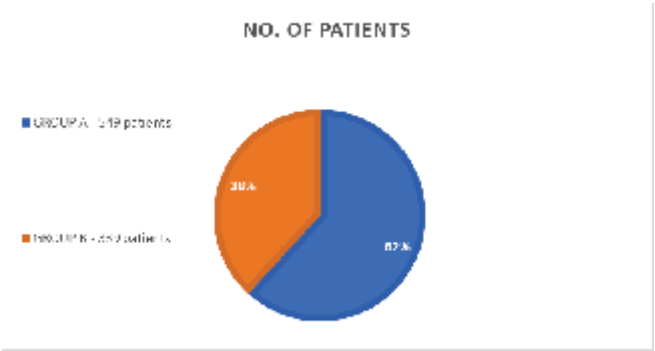
MATERIAL AND METHODS

The medical records of patients admitted to the Urology and Renal Transplant Clinic of the "Dr. C. I. Parhon" Hospital in Iasi, between November 1, 2018 - June 30, 2021 were analyzed. The patients with bladder tumors were divided into two reference groups: Group A - patients admitted between November 1, 2018 - February 28, 2020, before the state of emergency was declared and health restrictions were introduced; Group B - patients admitted between March 1, 2020 - June 30, 2021, in full pandemic.

The following data were collected: demographic data - number of patients, age in years, gender, urban/rural residence; laboratory examination - admission serum hemoglobin (g/dl), admission hematocrit (%), discharge hematocrit (%), admission white blood cell (WBC) count (× 109/l), admission C-reactive protein - CRP (mg/l), admission serum creatinine (mg/dl), discharge serum creatinine (mg/dl), and patient admission data: first presentation/or not of patients at the .Urology Clinic of the "Dr. C. I. Parhon" Hospital in Iasi, time from admission to surgery, length of hospital stay, and last but not least the histological criterion - tumor type: superficial/invasive. Statistical analysis was performed using the Student T-test and the Chi-Square test with Yates' correction calculated online at: http://www.socscistatistics.com/tests/Default.aspx

RESULTS

Included in the study were 888 patients, 685 (77.1%) men and 203 (22.9%) women, aged 39 to 92 years (mean age 69.45 years, SD +/- 9.89) before the pandemic and 22 to 94 years (mean age 68.8 years, SD +/- 10.96) during the pandemic. Demographic data for each group are listed in Table 1.



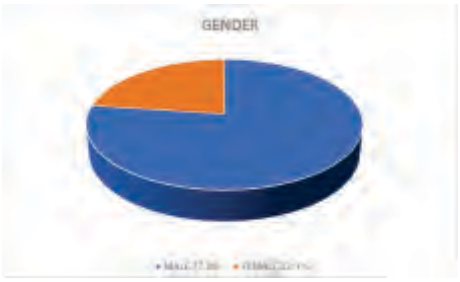


Table I. Demographic data for each study group

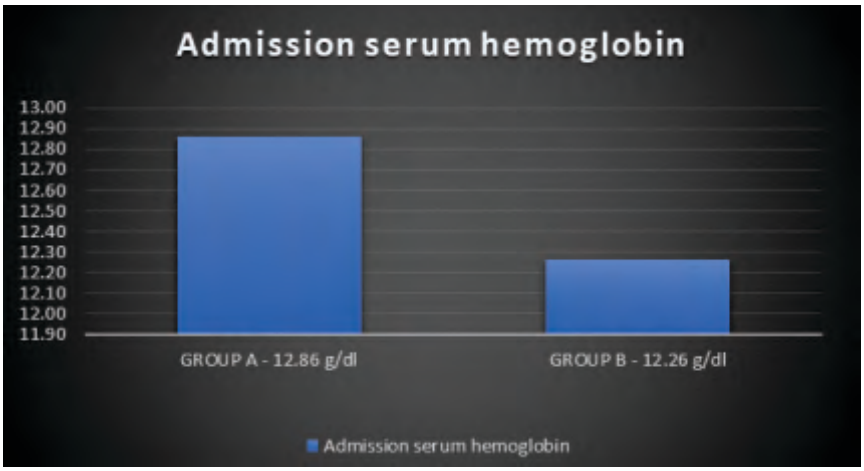
	Group A	Group B	p
No. of patients	549	339	0.372
Age (years)	39-92 (SD-9.89) mean- 69.45	22-94 (SD-10.96) mean- 68.8	0.054
Gender (F/M)	132/417	71/268	0.28
Residence (Urban/Rural)	280/269	152/185	0.29

The number of admitted patients was lower during the pandemic, when all but the vital (elective) emergencies have been postponed. No statistically significant difference in patient age was found between the two study groups, it being only slightly higher before the state of emergency was declared. The majority of admitted patients with bladder tumors were men, the percentage being even higher in their favor during the pandemic. No rural/urban difference in hospital presentation rate was found (Table II).

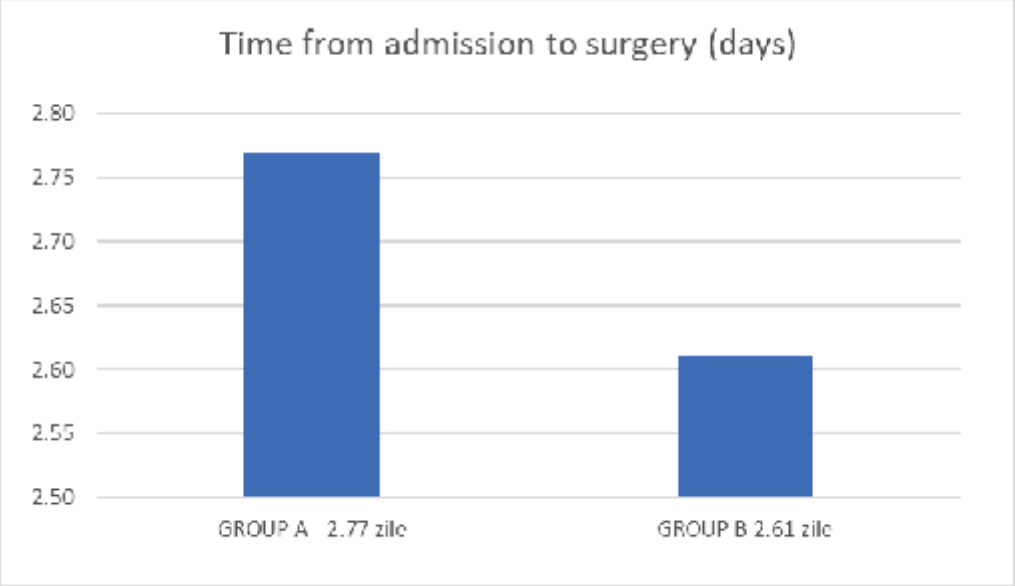
Table II. Characteristics of the two study groups

	Group A	Group B	p
First presentation	217/332	123/214	0.36
Admission serum hemoglobin (g/dl)	3.9-17.2; M=12.86 SD +/-4.39	2.7-16.7; M=12.26 SD +/-	0.003
Admission hematocrit (%)	13.6-50.4; M=39.78	9-48.1; M= 37.99	0.0006
Average discharge hematocrit (%)	M=34.02	M=33.36	0.29

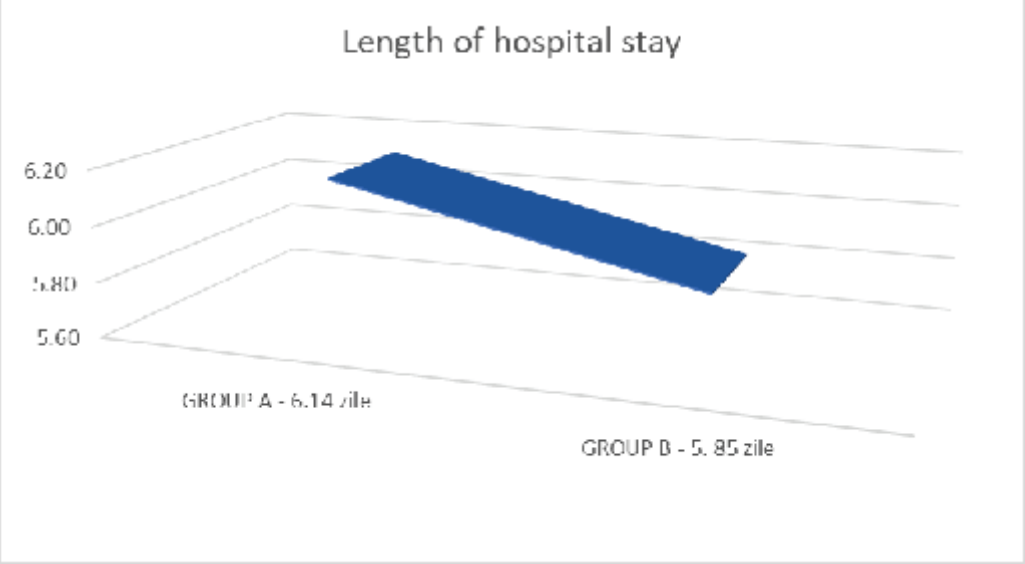
Admission WBCs (× 10^9/l)	2.8-50.4; M=8.23	3.1-22.56; M=8.87	0.009
Admission CRP (mg/l)	0.1-244.5; M= 8.86	0.1-293.9; M= 11.22	0.02
Admission serum creatinine D(mg/dl)	0.57-13.32; M=1.13	0.36-13.87; M=1.36	0.02
Discharge serum creatinine (mg/dl)	M=1.24	M=1.34	0.23
Tumor type superficial/invasive (n)	342/207	246/91	0.001
Time from admission to surgery (days)	1-17; M=2.77	1-16; M=2.61	0.27
Length of hospital stay	2-23; M=6.14	1-19; M=5.85	0.14

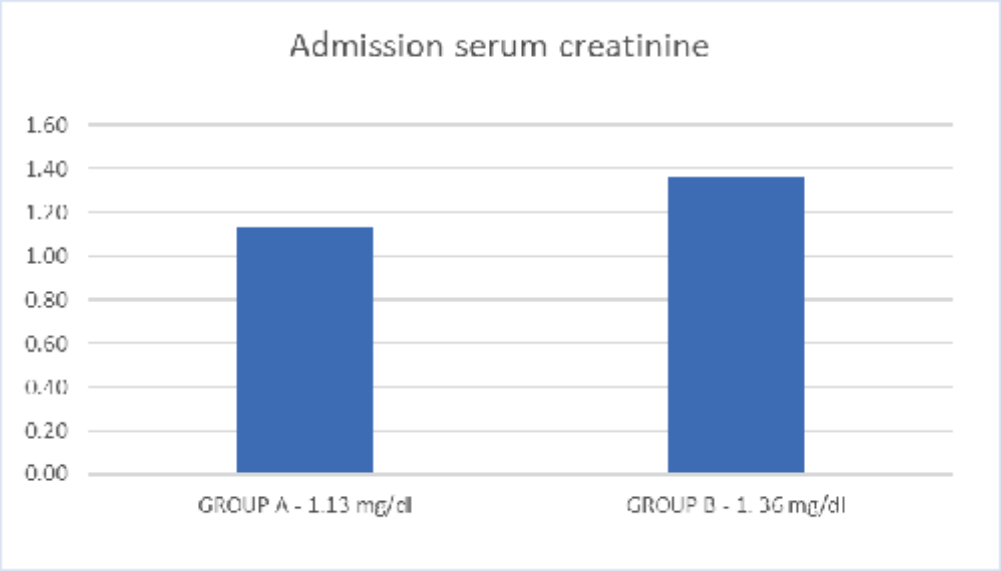


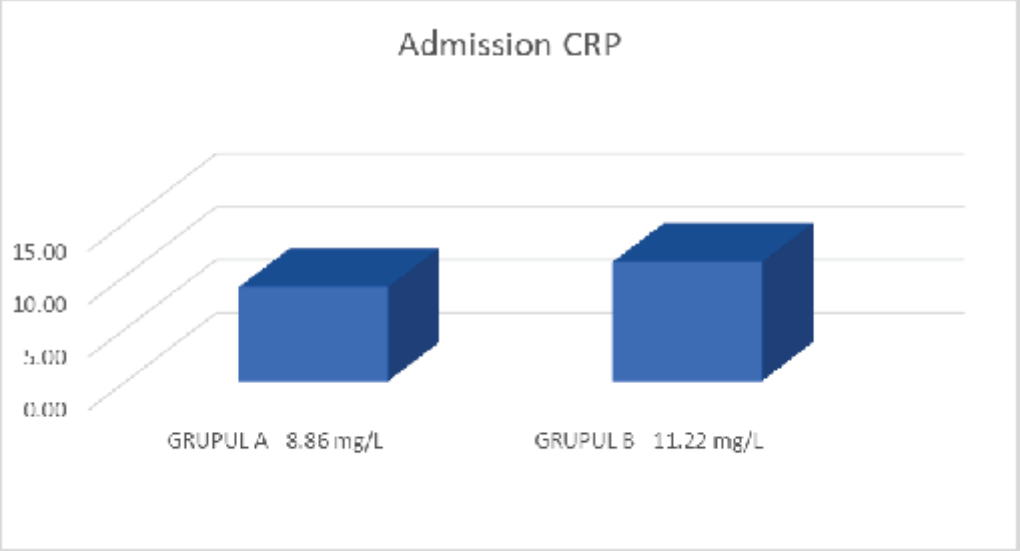
The anemic syndrome was more common in group B, the average hemoglobin level being 12.26 g/ dl, compared to 12.86 g/ dl in group A. The inflammatory syndrome was relatively more common in group B (CRP 11.22 mg/ l compared to 8.86 mg/ l in group A), without significant changes in WBC counts (8.87 × 109/l in group B compared to 8.23 × 109/l in group A). We did detect an increase in the incidence of renal failure, the average serum creatinine level being higher in group B (1.34 vs. 1.24 mg/dl)).



Time from admission to surgery was shorter after the declaration of the state of emergency. Length of hospital stay was shorter during the pandemic because of the associated increased risk of patient exposure for every extra day.







Admitted to our clinic since the state of emergency had been declared were 27 covid-19-positive patients, of which six diagnosed with bladder tumor. Due to the oscillating clinical course, these patients were admitted for at least 14 days, so that their vital parameters to be closely monitored and the worsening of their condition to be prevented. During the first wave of the pandemic in the Iași Urology Clinic four of the seven anesthesia and ICU physicians, and during the second wave (September-December 2020) the remaining three became infected, but all of them experienced mild to moderate disease forms. During the first wave, one senior consulting urologist and three resident physicians became infected. However, the fourth wave was more aggressive, with five senior consulting urologists and two resident physicians falling ill, which further affected the treatment possibilities of the patients.

DISCUSSIONS

The research made in France by Mejean et al. suggests that surgical interventions such as TUR-B should not be delayed for longer than three months and another study made by Rexer et al. recommends that other specific procedures such as Calmette-Guerin instillations should not be suspended[2,3].

Two recent studies have shown that cancer patients are at increased risk of infection especially if they had undergone surgery or received chemotherapy

less than 30 days before SARS-CoV-2 infection[4,5].

Although many surgical urological procedures can be delayed without additional risks, neoplastic diseases are a particularly special category. Of the patients included in this category, the most affected risk class is represented by patients over 60 years of age with bladder tumors, especially those infected with SARS-CoV-2. Some disease forms can be treated with chemotherapy or radiation therapy, but for a considerable number of patients, surgical treatment remains the only curative option[6].

The first wave of COVID-19 caused a huge lengthening of urology surgical waiting lists. A recent study suggests that over three million urological surgeries were canceled globally during the first wave[7]. Unfortunately, we could not find references in the literature regarding the unfavorable impact of the COVID-19 pandemic on patients with bladder tumors.

The reduced access to cancer care of patients with bladder tumors after the state of emergency has been declared can be explained by several factors. Patient's fear of going to the doctor was one of them. The media played one of the decisive roles in the exponential increase of reported cases in Romania. TV images with strong emotional impact, repeated again and again, opinions expressed by people without medical knowledge helped "fake news" spread and also led to growing distrust in the public health system and the spread of feelings of uncertainty. Another reason was the fear of contracting the new coronavirus in medical units. Although measures have been taken, such as social distancing, restricted access to hospitals, limited patient-visitor interactions, a study conducted in South Korea points out that one of the most important regulations was the introduction of mandatory use of surgical masks by all hospital staff and patients. The conclusion of this study is that the new coronavirus spreads more easily in wards, compared to emergency units, where the time patients spend is shorter[8,9].

CONCLUSIONS

The COVID 19 pandemic was and still is a global challenge with a direct impact on patients' access to cancer care, from the earliest possible presentation to the physician to the access to multimodal treatment. The main difference between the two groups of patients is the more advanced stage of neoplastic disease, at the time of presentation, illustrated by lower laboratory results of serum hemoglobin at admission to group B, of a C-reactive protein with higher results than group A, and a more significant blood urea nitrogen level in group B, all these factors can draw attention to a possible unfavorable evolution of the patient. Given their higher susceptibility to the novel coronavirus infection and a higher potential for developing perioperative complications due to tumor-induced immunosuppression, these patients are at high risk for adverse disease progression. This suggests that the end of this pandemic will be associated with increased cancer-related mortality and a future increase in cancer cases.

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