

## Case Report

### Acute Kidney Injury in an Elderly Patient

Matei-Alexandru COZMA<sup>1,2</sup>, Mihnea-Alexandru GAMAN<sup>1,3</sup>,  
Camelia Cristina DIACONU<sup>1,4</sup>

<sup>1</sup>“Carol Davila” University of Medicine and Pharmacy, Bucharest, Romania <sup>2</sup>Department of Gastroenterology, Colentina Clinical Hospital, Bucharest, Romania <sup>3</sup>Department of Hematology, Center of Hematology and Bone Marrow Transplantation, Fundeni Clinical Institute, Bucharest, Romania

<sup>4</sup>Department of Internal Medicine, Clinical Emergency Hospital of Bucharest, Bucharest, Romania

**Correspondence to:** Matei-Alexandru Cozma, Department of Gastroenterology, Colentina Clinical Hospital, Bucharest, Romania, e-mail: [matei.cozma@gmail.com](mailto:matei.cozma@gmail.com)

#### Abstract

**Introduction.** Prostate cancer is currently the second most frequent malignancy in males with nearly 1.4 million new cases every year. Hematuria, hemospermia, discomfort in the hypogastrium, urinary incontinence and incomplete evacuation of the bladder are some of the non-specific symptoms it associates. Acute kidney injury is a rapidly progressive form of renal dysfunction, most frequently associated with serum nitrogen by-product retention, electrolyte disturbances, a decreased total urinary output and numerous and diverse etiologies.

**Case presentation.** An 83-year-old male with several preexisting cardiovascular and gastrointestinal disorders presented to the emergency department for hypogastric pain with no specific irradiation or apparent relation with meals or body posture. The blood tests revealed metabolic acidosis, leukocytosis, moderate anemia, and nitrogen by-products retention and Abdominal ultrasound confirmed an enlarged, prostate and a series of simple renal and hepatic cysts. antibiotic treatment and hydro-electrolytic rebalancing therapy were initiated but, as the clinical evolution was declining, the patient underwent a computed tomography (CT) scan that revealed ureterohydronephrosis, a large periaortic adenopathic block and a severe circumferential thickening of the colonic wall. After ruling out colorectal neoplasia the patient was transferred to the surgery department, where a bilateral double-J stent was placed, and a prostate biopsy was performed. The prostate biopsy result was that of a poorly differentiated acinar adenocarcinoma with a Gleason score of 9 (4 + 5) and the patient was discharged approximately four days after surgery and referred to the urology department for treatment. The peculiarity of this case is the concomitant presence of a parietal circumferential thickening located in the recto- sigmoid and a significant abdominal lymphadenopathy. Large abdominal adenopathy is some of the most atypical prostate cancer presentations.

**Conclusion.** Acute kidney injury is a rapidly evolving syndrome that needs a complete evaluation and close follow-up for a correct diagnosis.

**Keywords:** prostate cancer, abdominal lymphadenopathy, acute kidney injury.

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#### INTRODUCTION

Prostate cancer is currently the second most frequent malignancy in males, with an

incidence of about 30.7 newly diagnosed cases/100,000 people in 2020 (nearly 1.4 million new cases), accounting for more than

15% of all cancers identified in men [1,2]. The incidence of prostate cancer varies significantly from country to country, depending on public health policies and patient screening programs. North America, Western Europe, and Australia have the highest incidence rates, owing primarily to the aging population phenomenon and well-developed screening programs that measure serum prostate-specific antigen (PSA) levels in the asymptomatic male population and perform a prostate biopsy among high-risk patients [2]. Although prostate cancer has a five-year survival rate of over 96% (almost 100% for individuals identified with localized disease versus 30% for those diagnosed with metastases), it alone accounts for over 375,000 deaths globally annually [3,4].

Although it may be associated with some more or less non-specific symptoms (hematuria, hemospermia, discomfort in the hypogastrium, urinary incontinence and incomplete evacuation of the bladder), in most cases, it is asymptomatic at the time of diagnosis [2,5]. Additionally, about 78% of patients are diagnosed with locally advanced illness, whereas 6% are diagnosed with metastases [6]. The number of subjects with a positive family history for prostate cancer is modest in comparison to the overall number of cases, but sufficient for genetic predisposition to be regarded as a risk factor [2]. To this day, nearly 100 genes have been identified to be potentially involved in the etiopathogenesis of prostate cancer, with BRCA-2, CHEK-2, and ATM being the most often highlighted [7,8]. Other risk factors include age over 55 years, obesity, type 2 diabetes mellitus, and hypercholesterolemia [5].

Acute kidney injury, which has largely replaced the term acute renal failure in recent years, is a rapidly progressive form of renal dysfunction that is most frequently associated with serum nitrogen by-product retention (urea and creatinine), electrolyte disturbances, and occasionally with decreased total urinary output [9,10]. The causes of this

syndrome are numerous and diverse and, therefore, for educational purposes and primarily to facilitate diagnosis and treatment, they have been split into three main categories: pre-renal (the most common, mainly represented by decreased total vascular volume or blood pressure), renal (glomerular, tubular, interstitial or vascular) and post-renal. The latter includes the following entities: intra/extra-renal urinary tract obstructions, most commonly because of stones, extrinsic compressions, or benign or malignant tumors of the prostate [9-11]. The rapid evolution of acute kidney injury requires prompt diagnosis and treatment tailored to each etiology.

### CASE PRESENTATION

An 83-year-old male, former smoker and occasional alcohol consumer, presented to the emergency department of the Clinical Emergency Hospital of Bucharest, Romania, for hypogastric pain, with an intensity of 7/10, with no specific irradiation or apparent relation with meals or body posture, that had begun two weeks prior and had gradually increased. The patient's medical history was relevant for the presence of multiple pre-existing cardiovascular and gastrointestinal disorders: atrial fibrillation, heart failure, hypertension, mitral regurgitation, ischemic stroke, carotid atheromatosis, hemorrhoidal disease, colonic diverticulosis and chronic kidney disease. During history, the patient complained of involuntary weight loss, pollakiuria, dysuria, and nocturia for about two months, for which he had requested an outpatient urological consultation. The ultrasound examination revealed an enlarged prostate measuring 65/44/48 mm and ureterohydronephrosis, while the laboratory tests showed nitrogen by-products retention (serum creatinine of 6.6 mg/dL and urea of 229 mg/dL) and hyperkalemia (6.6 mEq/L).

The clinical examination revealed cutaneous-mucosal pallor, blood pressure of 150/90 mmHg, and a mildly painful hypogastrium on palpation. Moreover, the

patient complained of pollakiuria, dysuria, and intense coloured urine. The blood tests performed in our emergency department revealed a mildly partially compensated metabolic acidosis, leucocytosis, moderate anemia, and nitrogen by-products retention. Abdominal ultrasound confirmed the presence of enlarged, inhomogeneous prostate and a series of simple renal and hepatic cysts.

The diagnosis of acute kidney injury was established, and the patient was consequently hospitalized in the Internal Medicine Clinic. The differential diagnosis included acute tubular necrosis, acute glomerulonephritis, haemolytic uremic syndrome, alcoholic or diabetic ketoacidosis, dehydration, urinary obstruction, or urinary tract infection. During hospitalization, antibiotic treatment and hydro-electrolytic rebalancing therapy were initiated.

However, the clinical evolution was unfavourable, with rapid deterioration of the renal function, which required an abdominal computed tomography (CT) scan. The CT scan revealed grade II ureterohydronephrosis, an adenopathic block measuring 3.9/10.1/15.7 cm that encircled both ureters and surrounded the aorta and inferior vena cava, with the upper limit at the origin of the superior mesenteric artery and extending to the aortic bifurcation (Fig. 1 and Fig. 2) and, finally, severe circumferential thickening of the colonic wall located at the recto-sigmoid level, with a length of 35 mm (Fig. 3). After performing an upper digestive endoscopy that ruled out colorectal neoplasia, the patient was transferred to the surgery department, where a bilateral double-J stent was placed, and a prostate biopsy through a transrectal approach was performed. After the procedure, the patient's renal function improved significantly over the next few days, with a gradual decrease in serum urea, creatinine, and potassium levels.

The patient was discharged approximately four days after surgery and referred to the urology department for treatment. The

prostate biopsy result was that of a poorly differentiated acinar adenocarcinoma with a Gleason score of 9 (4 + 5).

## DISCUSSION

The peculiarity of this case is illustrated by the concomitant presence of a parietal circumferential thickening located in the recto-sigmoid and a significant abdominal lymphadenopathy. Given the possible causal relationship between the two and the patient's risk factors for colorectal cancer (age over 50 years, smoking and alcohol consumption history), the first possibility considered was an abdominal lymphadenopathy secondary to a colorectal tumor. This is why prior to concentrating on the prostate, a lower digestive endoscopy was performed, to rule out this possibility.

The treatment of prostate cancer is complex. The final decision is made based on several factors, including anatomy extent of the tumor, histological (Gleason score) and molecular characteristics, the serum PSA levels and, of course, comorbidities and overall, the patient's medical condition [12]. There are, of course, several stratification systems depending on these factors, such as the ones provided by National Comprehensive Cancer Network or European Society for Medical Oncology. An essential part of making these decisions is represented by various cross-sectional imaging methods, such as CT, magnetic resonance imaging, or positron emission tomography scan, which are used both for the initial assessment and for the regular follow-up of these patients [12,13]. Tumors with a Gleason score of 9 or 10 are considered to have a histological grade of 5, and patients are considered to be at high-risk [14]. Therapeutic options for these patients are relatively limited, and there is still debate about which is the most effective.

The updated guidelines include both radical prostatectomy and radiotherapy, associated or not with brachytherapy, the latter combination having slightly better results in recent comparative studies

[15,16]. Large abdominal adenopathy is some of the most atypical prostate cancer presentations, this being associated more frequently with loco-regional adenopathy (iliac, obturator, inguinal, or retroperitoneal level) [17] [18]. When located retro-aortic or mesenteric, they are most caused by non-Hodgkin's lymphoma, various types of leukemia, Whipple's disease, or mastocytosis [17,19].

## CONCLUSIONS

Acute kidney injury is a rapidly evolving syndrome, with multiple and diverse causes. Among these are extrinsic renal urinary tract obstructions, which are represented by large abdominal adenopathy in very rare cases. That is why a complete evaluation and close follow-up of the patient are always necessary for a correct diagnosis, to initiate the appropriate treatment.

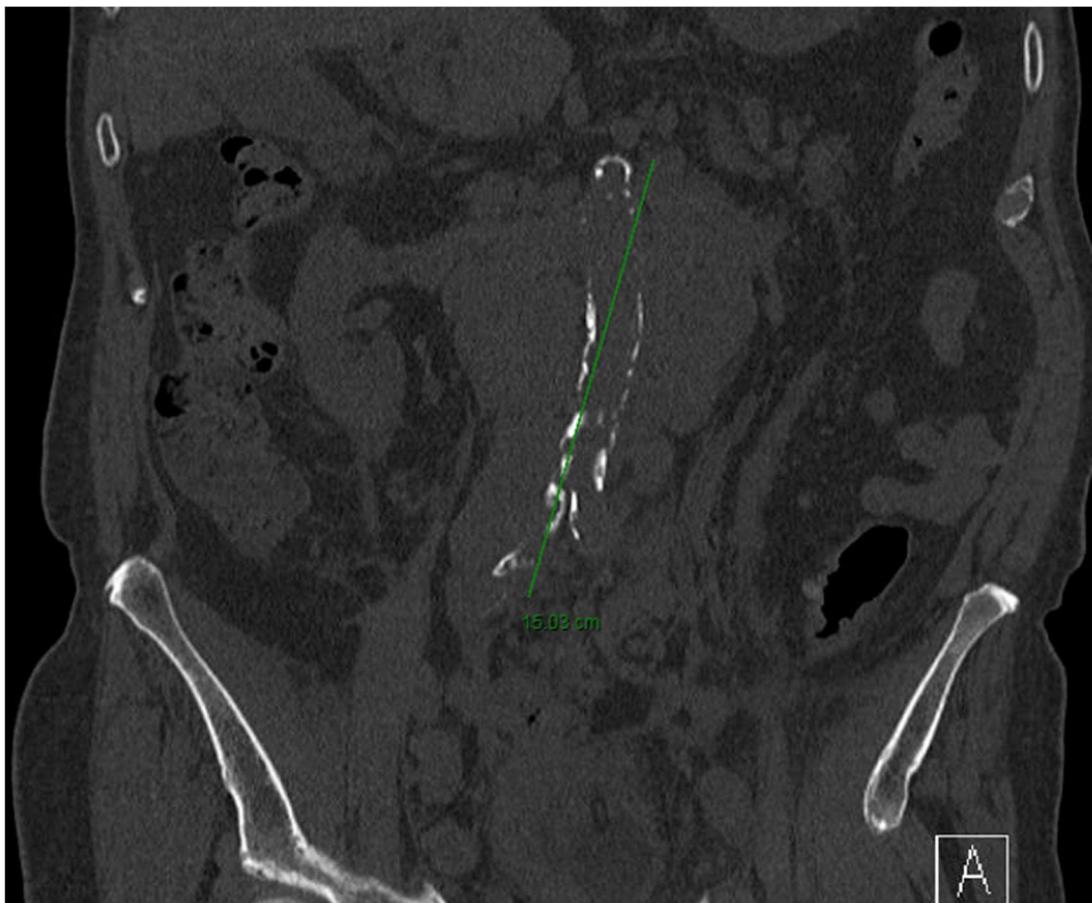


Fig. 1. Abdominal CT scan. Antero-posterior view of a large adenopathic block that encircled both ureters and surrounded the aorta and inferior vena cava.



Fig. 2. Abdominal CT scan. Transversal view of the same adenopathic block



Fig. 3. Abdominal CT scan. Circumferential thickening of the colonic wall located at the recto-sigmoid level

**Author Contributions:**

M.A.C., M.A.G. and C.C.D. were responsible for the diagnostic procedures, clinical diagnosis, and treatment decisions. M.A.C. and M.A.G. wrote the manuscript. C.C.D. critically revised the manuscript. All authors have read and agreed to the published version of the manuscript.

**Compliance with Ethics Requirements:**

“The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from the patient included in the study”

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