



Case Report

Giant Retroperitoneal Cystic Lesion: An Unusual Etiology

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Abstract

Retroperitoneal cystic masses comprise a wide range of lesions that are difficult to diagnose due to their proximity to different structures and to their nonspecific symptoms. These masses are classified as either neoplastic or nonneoplastic. They include etiologies such as adenoid cystic carcinoma, mesothelioma, teratoma, lymphoceles, hematoma and urinoma. The present case report describes a patient who developed a large retroperitoneal cystic lesion (20x20cm) that compressed several abdominal organs, ranging from the right upper quadrant to the abdominal pelvis; thus, this lesion presented critical symptoms. Exploratory laparotomy was performed for topographic diagnosis and treatment purposes. A retroperitoneal mass containing approximately eight liters of fluid was resected. The intraoperative diagnosis was urinoma resulting from renal pelvis injury induced by extracorporeal shock wave lithotripsy. The present case stands out for the large urinoma, which is a rare disease in clinical and surgical practices, and can act as differential diagnosis for other abdominal masses.

Keywords: Cystic lesion; Lithotripsy; Retroperitoneal masses; Urinoma

Introduction

Retroperitoneal masses comprise a diverse group of lesions. They are classified as primary (not originated from retroperitoneal organs) and secondary (originated from organs such as pancreas, kidneys, adrenal glands or bowel loops). Symptoms vary depending on lesion location, size and on the involvement of surrounding structures [1]. Retroperitoneal cystic lesions can be classified as either neoplastic or nonneoplastic. Neoplastic lesions include cystadenomas, cystadenocarcinomas, cystic mesotheliomas, cystic lymphangiomas and cystic teratomas. Nonneoplastic lesions include epidermoid cysts, Müllerian cysts, pancreatic pseudocysts, lymphoceles, urinomas and hematomas [2]. Medical diagnosis starts with radiology exams, mainly computed tomography and magnetic resonance imaging. These exams can precisely detect lesion characteristics, namely: location, dimensions, possible cleavage planes, staging and texture (cystic or solid). Radiological mass characteristics - such as fat, calcifications, necrosis and vascularization - allow for differential diagnosis, reveal potential biopsy sites and aid surgical planning [3].

Case Report

A 47-year-old white female patient was referred to the Hospital by the Emergency Department due to deep vein thrombosis in the left lower limb and right renal colic. The patient reported burning pain in the left lower limb, related to edema, erythema and elevated local temperature, for 12 days. She also complained of colicky lower-back pain radiating to the right flank, related to dysuria and hematuria. The pain had started a week before hospital admission and it progressively worsened and got accompanied by nausea and vomiting, and denied fever. She had rheumatoid arthritis and medical history of two Extracorporeal Shock Wave Lithotripsies (ESWL) due to right ureteric calculi - the first one, a year before, and the second, three months before admission. Months after the first procedure, she presented progressive increase in abdominal volume, which progressed to the following symptoms: right-upper quadrant abdominal pain, right flank pain, dyspnea on medium exertion, orthopnea and lower-limb edema.

These symptoms had been previously assessed through abdominal ultrasound, which revealed the following conditions: large cystic lesion of apparently retroperitoneal origin occupying the right hemiabdomen; staghorn calculus in the right kidney, slightly

dilated renal calyces and calculi in the left renal sinus. The patient presented regular general state during physical examination. She had pallor (++)/4, speaking-related dyspnea (oxygen saturation of 96% on room air) and no other changes in vital signs. Breath sounds were lower in the right lung base. The abdomen was globose and presented diffuse tenderness to palpation, mainly at the right side. There was a large abdominal palpable mass occupying the area from the hypochondriac regions to the right iliac region. Lower limbs were swollen and asymmetrical; the left calf had blood clots with inflammatory signs, as well as positive Homan's sign.

The patient was subjected to laboratory and radiology exams, which presented the following results: Abdominal-pelvic tomography detected right kidney displacement by a large cystic mass (20x20 cm) that extended from the pelvis to the right upper quadrant, with right staghorn calculus (Figure 1). In addition, there were calcifications in the right distal ureter. Chest tomography detected a pulmonary nodule of unknown progression in the right lower lobe (it measured 13.6 mm), as well as pulmonary consolidation in the right lower lobe. Doppler ultrasonography of the left lower limb detected acute deep vein thrombosis in the femoral-popliteal and popliteal artery segments, and acute superficial thrombophlebitis in the great saphenous vein arch.

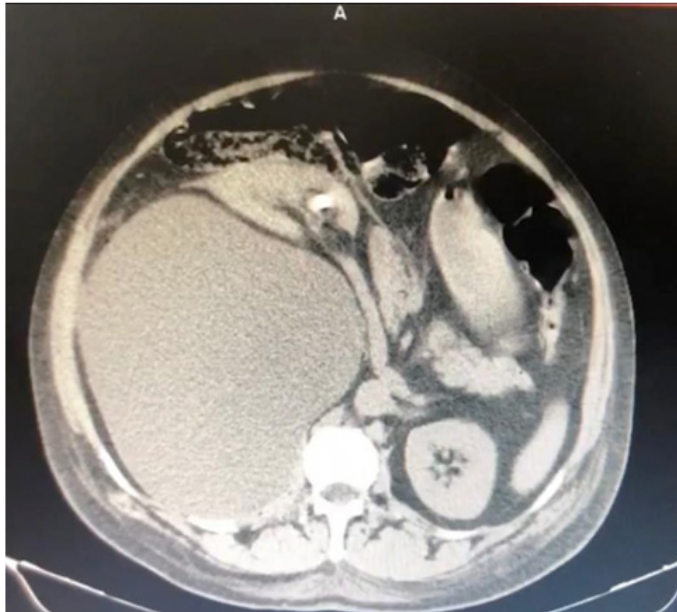


Figure 1: Abdominal and pelvic Computer Tomography (CT) scan showing large cystic mass in the right hemiabdomen. Source: authors (2019).

Further examinations did not provide accurate diagnosis nor detected etiologies. Exploratory laparotomy was the method of choice for decompression and potential resection of the cystic lesion, in order to relieve symptoms. A large cystic lesion was identified during the surgical procedure. It contained approximately eight liters of fluid and occupied the retroperitoneal space from the right upper quadrant to the abdominal pelvis. The cystic mass communicated to the right renal pelvis. Cystic content was drained in order to improve intraoperative exposure. The cystic capsule was resected and separated from its communication to the renal pelvis through the insertion of a double J-stent (Figure 2). Pyelogram was performed by the insertion of a polydioxanone thread (4.0). The right paracolic gutters were drained by Waterman drain.

The patient recovered well from the procedures and was referred to the urology service for staghorn calculi treatment. The cystic content and the capsule were submitted to the hospital's anatomical pathology department for analysis. The anatomical description was of fibrous capsule formation devoid of epithelial tissue. This formation included moderate lymphoplasmocytic chronic inflammatory infiltrate, as well as intramural fibroid and amyloid deposits in the cyst wall. The crystal violet staining method was positive for the sample (Figure 3). Diagnosis was considered consistent with urinoma induced by extracorporeal shock wave lithotripsy. It was determined by the following criteria: outpatient clinic, radiology exams, surgical injury management and anatomopathological reports.

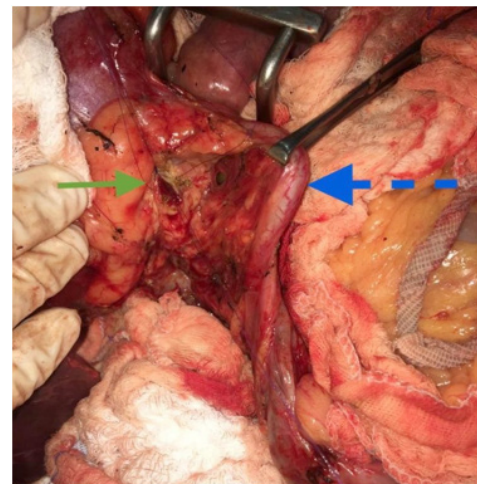


Figure 2: Intraoperative image: Straight arrow - renal ostium connected to the urinoma wall. Dotted arrow - ureter. Source: authors (2019).

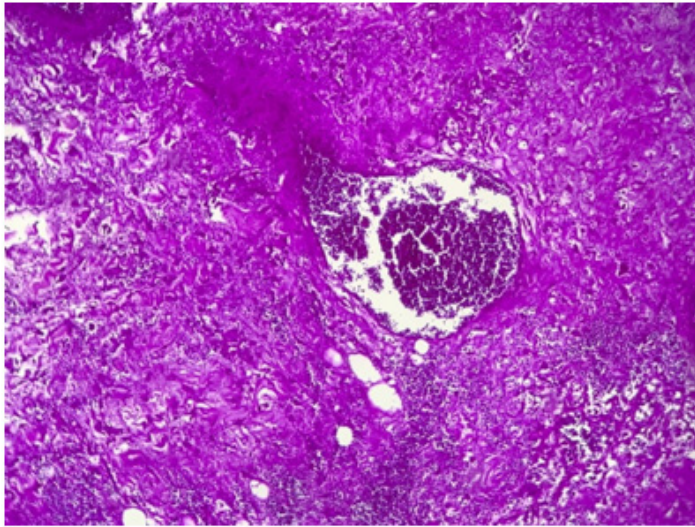


Figure 3: Anatomopathological image: positive crystal violet staining method. Source: authors (2019).

Discussion

Urinoma is a rare pathology; it consists of a retroperitoneal mass filled with urine that leaks from the urinary tract without rupturing the perirenal fascia [4]. This leakage triggers a local inflammatory response (lipolysis) in the surrounding perirenal fat, with resultant urine encapsulation [5]. Urinoma results from renal trauma caused by specific degrees of urinary obstruction. Possible causes for it include posterior urethral valve, blunt or penetrating abdominal trauma, pelvic mass, pregnancy, retroperitoneal fibrosis and ureterolithiasis - which is the most common cause of spontaneous urinoma. Iatrogenic injuries during surgical or percutaneous procedures, such as extracorporeal shock wave lithotripsy, are rare causes of kidney injury [6-8].

Urinomas usually present as small urine collections without acute symptoms. Thus, they are usually reabsorbed without need of medical intervention [5,8]. The reported patient presented a large urinoma (20x20cm) with approximately eight liters in volume, which caused severe systemic consequences due to compression of adjacent structures. This compression might have developed from damage to the renal pelvis by extracorporeal lithotripsy.

There is no epidemiological data on urinoma caused by extracorporeal shock wave lithotripsy. Moreover, this pathology is rarely described in the research literature. The first reported case was from Alkibay, et al. the patient presented with fever and abdominal mass twenty days after the ESWL procedure [9]. On the other hand, the herein reported patient developed symptoms for one year. As a result, the clinical picture was aggravated by extensive cyst growth [9].

ESWL disintegrates renal pelvic stones through three basic mechanisms: cavitation, shear stress and shattering. Cell damage is caused by many physical agents, namely: stress and strain forces, heat stress, free radicals and cavitation. These agents inflict harm on the renal parenchyma and adjacent structures. The reported patient presented with acute ureteral obstruction and ruptured capillaries; moreover, there were focally ruptured endothelial cells in the ureteropelvic walls. These alterations suggest sufficient damage to the nephron or the renal vasculature to cause blood and urine leakage into the extracellular space [10]. The most common symptoms are lumbago (low back pain), abdominal pain, palpable abdominal mass and fever [6,11].

Most urinomas leak into a subcapsular location or into the perirenal space within the Gerota fascia. Extensive urinomas may even cross the midline through the posterior pararenal space (anterior to the aorta) and the inferior vena cava [8]. The reported case indicated that the urinoma compressed the inferior vena cava. This compression impaired venous return, thus causing lower-limb edema and deep vein thrombosis. The subsequent displacement of intra-abdominal organs by the large cystic mass caused hypoxemia, nausea, vomiting and constipation. Computed Tomography (CT) of the chest revealed that the increased intra-abdominal pressure elevated the diaphragmatic dome and altered ventilatory dynamics, thus causing dyspnea, orthopnea and alterations in the lung parenchyma.

Abdominal Ultrasound (AU) is one of the most affordable methods; it can help detecting lesions such as hydronephrosis and perirenal fluid collection during initial examination. However, this method can also be quite limited: The herein reported patient was subjected to an AU that failed to detect the cystic location and even suggested an ovarian tumor [6]. Contrast Computed Tomography (CT) is the method of choice for urinoma diagnosis, as it can detect lesion location and extent in the urinary collecting system, as well as involvement of neighboring structures [6,12]. However, the patient was subjected to non-contrast abdominal and pelvic CT during initial care. As a result, lesion location was not accurately detected, but the results suggested that it could be respected. Therefore, exploratory laparotomy was the method of choice to relieve organ compression.

Conclusions

Urinoma should be part of the diagnostic scope of retroperitoneal cystic lesions in patients who have already undergone urinary tract procedures. Once the disease is presumed, preoperative diagnosis can be provided and therapy can be easily performed through non-invasive methods to avoid injuries. Early treatment can avoid surgical procedures and prevent the aforementioned clinical consequences.

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