

Unusual presentation of giant perinephric abscess with lower limb involvement

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Abstract

Perinephric abscess is a complication of urinary tract infection. It has the potential to extend beyond the Gerota's fascia and cause serious illness. We report for the first time on an unusual presentation of a perinephric abscess crossing anatomical sections and extending through the inguinal canal to the ipsilateral lower limb. Treatment was immediate and involved multi-disciplinary operations.

Keywords: Perinephric abscess; Gerota's fascia; Lower limb; Nephrectomy.

Introduction

A perinephric abscess is a collection of pus in the perinephric space, and represents an unusual complication of urinary tract infection, mainly caused by gram negative organisms and anaerobes [1]. The clinical presentation is usually fever and flank pain, and diagnosis is often established by computed tomography (CT) imaging [2] together with positive urine cultures [3]. Treatment is often based on antimicrobial coverage, drainage of collections, and correction of any treatable underlying predisposing cause [4]. We report, for what we believe to be the first time, an unusual presentation of a perinephric abscess extending through the inguinal canal to the ipsilateral lower limb.

Case presentation

A 78-year-old male arrived to the emergency room in a poor clinical state and complaining of right lower limb pain. His medical history included peripheral vascular disease and recurrent urinary tract infections due to benign prostate hyperplasia. His vital signs were within normal limits. The physical examination was notable for altered mental status and stupor, right costovertebral angle tenderness, and a warm, red right thigh with subcutaneous emphysema. The blood workup revealed

leukocytosis and elevated C-reactive protein. He was referred to a CT scan based on a clinical impression of deep soft tissues gas gangrene. CT revealed a giant right perinephric abscess spreading into the psoas and continuing caudally to the right lower limb (**Figure 1**). An urgent multidisciplinary meeting was held, concluding that immediate surgery was essential for the patient's survival despite the high risk of perioperative mortality. Broad spectrum intravenous antibiotics were initiated, and an exploratory laparotomy was performed. A large right retroperitoneal abscess involving the kidney and the psoas was identified and drained, and a right total nephrectomy was performed to an ill-appearing kidney. Extensive debridement of thigh muscles and a fasciotomy were carried out as well. The pathology specimens were consistent with necrotizing inflammation and abscess formation of the kidney (**Figure 2**) and the muscles. Blood and pus cultures were positive for extended spectrum beta-lactamases gram negative *Klebsiella pneumoniae*. The intraoperative and microbial findings confirmed the diagnosis. Despite all supportive efforts in the intensive care unit, the patient developed multi-organ failure and died on the second postoperative day.

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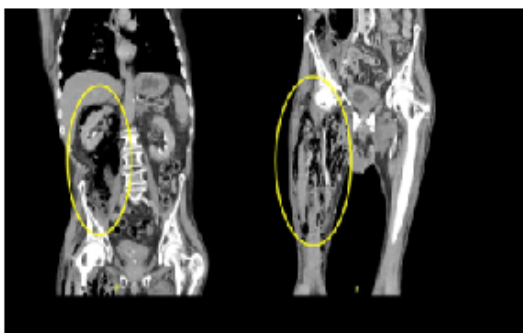


Figure 1: Computed tomography images of the perinephric abscess extending to the ipsilateral lower limb.

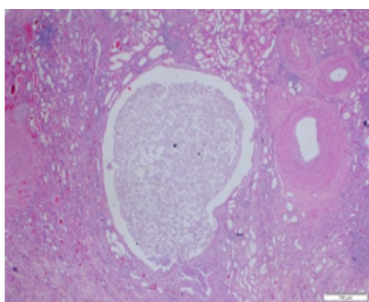


Figure 2: Necrotizing pyelonephritis with abscess formation.

Discussion

Perinephric abscess is uncommon and often misdiagnosed due to its insidious nature. Renal calculi, diabetes mellitus, urologic manipulation and immunosuppression are the main risk factors [3]. Management of a perinephric abscess is generally conservative or minimally invasive [5]. It usually requires the draining of purulent material, since medical treatment is predictably satisfactory for small abscesses, i.e., less than 3cm [3]. Surgical exploration is reserved only for severe uncontrolled cases. Although nephron-sparing interventions are more desirable, nephrectomy is indicated in cases of extensive parenchymal damage or severe sepsis [5]. Meng et al. reported that 16% of perinephric abscess cases would require surgical exploration and nephrectomy, with associated mortality rates of 12% [3].

The Gerota's fascia is comprised of the fascia of Toldt anteriorly and the fascia of Zuckerkandl posteriorly. Inferiorly, these fasciae fail to fuse with the continuum of the perinephric and pelvic fat. Perinephric collection has the potential to rupture through Gerota's fascia into the pararenal spaces and extend to adjacent structures [4]. Extensions to the thorax, [6,7] the spleen, [8] the mediastinum, the epidural space, [9] and even intraperitoneally to the colon [10] have been described. However, our literature search failed to yield any similar cases in which the abscess reached the lower limbs. Our patient had an unusual extension of a giant perinephric abscess inferiorly to the inguinal canal and the anterior thigh. The initial presentation was misleading and concentrated on the soft tissues of the lower limb. Only thorough investigation revealed the whole picture. A multidisciplinary surgical intervention was mandatory to maximize prognosis, and the team was comprised of urologists, general surgeons, and orthopedic sur-

geons. We were aware that the extensions of the abscess to adjacent organs and anatomical compartments raised the risk of morbidity and portended a grim outcome. Despite all of our efforts, our patient did not survive the postoperative period.

Statement of Ethics: The deceased subject family has given its written informed consent to publish the case.

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Author Contributions

All authors discussed the results and contributed to the final manuscript.

Ziv Savin imported all the case's clinical details.

Ibrahim Fahoum provided all the case's pathological details.

Nicola J Mabeesh and Boaz Sagie made critical revision of the manuscript for important intellectual content.

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