

Research Article

ACUTE KIDNEY INJURY FROM RETROPERITONEAL FIBROSIS

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ABSTRACT

Retroperitoneal fibrosis (RPF) is a rare disease with unknown etiology. The authors discuss RPF in the context of a patient undergoing laparoscopic ureterolysis for bilateral ureteral obstruction resulting from RPF. This rare disorder should be considered in the differential diagnosis for acute kidney injury by postrenal causes.

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INTRODUCTION

The term acute kidney injury (AKI) refers to an abrupt decline in kidney function that results in an elevation of blood urea nitrogen, creatinine, and other metabolic waste products normally excreted by the kidney. AKI is generally detected by an increase in serum creatinine and/or a decrease in urine output. AKI is defined as (1) increase in serum creatinine of ≥ 0.3 mg/dL within 48 hours, (2) an increase in serum creatinine of ≥ 1.5 times baseline within the prior seven days, or (3) urine output < 0.5 mL/kg/hr for more than six hours (Kellum, 2013). Causes of AKI are best categorized as pre-renal, renal, or postrenal. Among hospitalized patients, AKI is most commonly due to acute tubular necrosis from ischemia, nephrotoxin exposure or sepsis (Nash *et al.*, 2002). Other frequent causes of AKI, among either ambulatory or hospitalized patients, include volume depletion, acute interstitial nephritis, and urinary obstruction.

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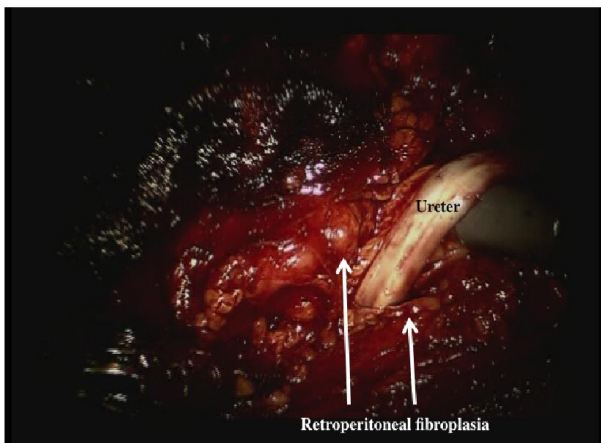
MATERIALS AND METHODS

Image 1 (below) was taken during laparoscopic ureterolysis for bilateral ureteral obstruction resulting from retroperitoneal fibrosis (RPF), a condition characterized by infrarenal periaortitis (Scheel and Feeley, 2013). Discovered by John Kelso Ormond in 1948, reported risk factors for RPF include inflammation from malignancy or aortic aneurysmal leak, or medications. This patient was noted to have AKI in the perioperative period in question.

RESULTS AND DISCUSSION

Retroperitoneal fibrosis is a rare disease with unknown etiology. It has been found to be associated with various drugs, including beta blocking drugs such as acebutolol, metoprolol, atenolol, oxprenol, propranolol, and sotalol. The best studied and documented pharmacologic agents associated with RPF are methysergide and ergotamine. Ergot derivatives are still used to treat Parkinsonism (pergolide, cabergoline, and bromocriptine).

Idiopathic retroperitoneal fibrosis most commonly occurs in the 40 -60 age group with a 2:1 male to female predominance. Systemic inflammatory processes such as mediastinitis, Reidel's thyroiditis, sclerosing cholangitis and orbital pseudotumor often coexist thereby suggesting a local or systemic inflammatory process as the underlying etiology of this subtle disease. Additionally, connective tissue disease processes such as systemic lupus erythematosus, sarcoidosis, and lupus nephritis have been implicated (4). Que and Manderna postulated that in addition to a localized response to irritation, there may also be a "predisposition to collagen disease" (5). Trudy *et al* reported a case of female patient with hypertension, and hematuria with atypical symptoms of an inflammatory arthritis, Raynaud's phenomenon, skin lesions, and migraines. (6) These atypical symptoms suggest a systemic inflammatory or vasculitic component.



Initial symptoms of retroperitoneal fibrosis include malaise, anorexia, weight loss, fever, backache, and hypertension. Often there is a dull aching pain in the girdle region, originating in the lumbosacral region. Excretory urography shows the classic triad of proximal hydronephrosis, medial deviation of the ureters, and extrinsic compression of the ureters (7,8). Computer-assisted tomography is considered the imaging modality of choice to visualize the extent of fibrosis as well as to assess for lymphadenopathy and tumor.

Numerous reports suggest an association of retroperitoneal fibrosis and collagen vascular disease. Bonet *et al.* (6) reported a patient that presented with retroperitoneal fibrosis, including mesenteric, pulmonary, and periarticular fibrosis, and an associated panniculitis. Raynaud's phenomenon has been described in association with retroperitoneal fibrosis (5). A highly elevated antinuclear antibody titer has specifically been seen in cases of retroperitoneal fibrosis accompanied by signs and symptoms of an autoimmune process. Management of RPF may include withdrawing causative agents, immunosuppressants to decrease inflammation and inhibit fibrosis, and interventional/surgical relief of mechanical obstruction to protect the kidney from chronic injury.

Conclusion

RPF is a rare disorder should be considered in the differential diagnosis for AKI by postrenal causes.

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