Emphysematous urinoma

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Ureteroscopy is a commonly performed endourological procedure. Although complications after ureteroscopy are rare (less than 2%), urinary infection is the commonest problem. Emphysematous pyelonephritis (EPN) is a rare life-threatening infection characterised by the presence of gas within the renal parenchyma, collecting system and perinephric tissue. Here, immediate nephrectomy is often considered essential. Such an emphysematous infective process may occur in collections of urine (urinoma) that occur secondary to a urinary leak. We describe a case of emphysematous infection of a post-ureteroscopy urinoma with interesting radiological findings, a so-called ‘emphysematous urinoma’.

Case History

A 68-year-old diabetic lady presented three weeks after ureteroscopy for left ureteric calculus with left flank pain, fever, altered sensorium, hypotension (BP<90mm of Hg) and leucocytosis of 25,000. Bedside ultrasound and later a computerised tomography revealed a large subcapsular urinoma with multiple air-fluid levels along the posterior aspect of the kidney. Renal parenchyma and pelvi-calyceal system were otherwise normal (Figures 1 and 2).

Under local anaesthesia, sonography-guided percutaneous aspiration and pigtail drainage of urinoma was done; 150 millilitres of purulent fluid with gas was drained. Culture of the aspirated fluid grew E coli.

Patient improved with parenteral antibiotics, hydration, glycaemia control and percutaneous drainage. Antibiotic cover included cefoperazone (2 g twice a day), amikacin (500 mg twice a day) and metronidazole (500 mg thrice a day). The urinoma cavity was lavaged daily with diluted gentamicin and povidone iodine solution. The lavage was performed to keep the drainage catheter patent, for local antibiotic effect and for the sclerosant effect of iodine. Contrast study was done on alternate days to monitor the size of the cavity. Pigtail catheter was removed after nine days once the cavity collapsed. Patient had a smooth postoperative course.

Discussion

This case report illustrates an uncommon complication of urine leak after ureteroscopy, leading to emphysematous urinoma. The diagnosis was made by computed tomography and was treated with drainage and aggressive antibiotics.

EPN is a severe renal infection, more common in elderly diabetic patients often associated with the destruction of the renal parenchyma. It is also described in association with renal cell carcinoma, end-stage renal disease and after renal transplant. The commonest offending organism is E coli; rarely Klebsiella pneumoniae and Can-

Figure 1: CT Scan showing large subcapsular collection with air-fluid levels along the posterior aspect of the left kidney.

Figure 2: Reconstructed CT Scan image showing large subcapsular collection with multiple air-fluid levels.
dida, have been described.

The sequence of events that led to the present condition can only be speculated. Presumably there was a subcapsular collection due to fornicial tear caused by the high irrigation-pressures during ureteroscopy. This collection could have been infected with *E. coli*. The high ambient glucose concentration in the collection with poor blood supply (conditions thought to be conducive to gas formation) might have led to the picture of emphysematous urinoma.

A potential source of gas in the urinoma could be a fistulous communication with a loop of bowel. This source was excluded by contrast study. The other potential source of gas could have been the catheterisation of the urinary tract. The absence of gas in the collecting system makes this less likely.

Earlier literature suggests nephrectomy as the only option for fulminant EPN. However, this itself is a hazardous intervention in a septic, unstable patient with circulatory or liver failure, with mortality of about 40%. Currently the trend is towards conservative treatment with antibiotics, relief of obstruction and percutaneous drainage when necessary. Huang has classified EPN into four classes. Class 1 and 2 where the gas is limited to the collecting system or the parenchyma, had excellent results with renal conservation. Extensive infection (Class 3 and 4), especially when associated with thrombocytopenia, acute renal function impairment, disturbance of consciousness, or shock, needed nephrectomy. In our patient, the conservative strategy worked well and led to uneventful recovery.

References