Renal Actinomycosis Accompanying Staghorn Calculi

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Actinomycosis is a chronic infectious disease that is generally caused by Actinomyces israelii. Renal actinomycosis is a very rare disease, especially accompanying staghorn calculi formation. In this article, we present a case of renal actinomycosis with the staghorn calculi formation. A 52-year-old woman presented with a 3-month history of pain in the right upper quadrant. The abdominopelvic computed tomography scan showed staghorn calculi and severe dilatation of the pelvicalyceal system of the right kidney. A right simple nephrectomy and a partial resection of the infrahepatic inferior vena cava were performed. We anticipated that the final diagnosis would be xanthogranulomatous pyelonephritis, however histopathologic tests revealed renal actinomycosis with abscess formation and extensive inflammation, glomerulosclerosis and staghorn calculi.

Keywords: Actinomycosis; Kidney calculi

Actinomycosis is a granulomatous and suppurative infection that is localized most frequently in the cranio-cervical region. It is a chronic infection which is very rare disease caused by Actinomyces israelii. Renal actinomycosis is uncommon as other urologic organs including the urethra and the urinary bladder. It can often mimic a tumor of the urinary system. The authors report a case of renal actinomycosis accompanying staghorn calculi and a non-function kidney.

CASE REPORT

A 52-year-old woman presented with the pain of the right upper quadrant for 3 months. The patient did not have any familial and medical histories except 3 times-surgery histories including the appendectomy, the uterine myomectomy and the internal fixation for scoliosis. The routine urinalysis revealed 10-14 white blood cells/high power field and the blood chemistry revealed that the modification of diet in renal disease study equation estimated glomerular filtration rate is decreased as 80.4 ml/min/1.73 m². The abdominopelvic computed tomography (CT) scan demonstrated that a 3.5×5 cm sized radiopaque lesion which showed as staghorn calculi on the pelvocalyceal system and a severe hydronephrosis were shown on the right kidney (Fig. 1). The technetium...
dimercaptosuccinic acid (Tc-99m DMSA) scan revealed that the relative function of the right kidney is 2% compared with 98% of the left kidney (Fig. 2). The operator had wanted to perform laparoscopic simple nephrectomy but he could not do that because the hilum of the right kidney was severely adhered to the infrahepatic inferior vena cava (IVC), thus the surgery was converted to the open nephrectomy. A partial resection of the infrahepatic IVC was performed with the right nephrectomy. The estimated blood loss was 1800 ml and operating time was 520 minutes. Histopathologic tests revealed renal actinomycosis with abscess formation and extensive inflammation, glomerulosclerosis and staghorn calculi (Fig. 3).
DISCUSSION

Actinomyces israelii is an anaerobic or microaerophilic, gram-positive bacterium and highly susceptible to a wide spectrum of antimicrobial agents. It presents mainly in the cranio-cervical region (60-80%), thorax (10-15%), abdomen (5-20%) and exceptionally retroperitoneal organs.1

Actinomycosis often mimics a malignant mass because the radiologic diagnosis of this disease is very difficult and immunologic tests are not specific.2 Magnetic resonance imaging was reported to show that mass of actinomycosis presented a relative absence of high signal intensity on T2-weighted image compared to ovarian and genitourinary malignancies.3 According to Lim et al’s report,4 the general positron emission tomography (PET)/CT finding of actinomycosis is intense hypermetabolism as in malignancy and there is not much difference in the PET/CT findings between malignancies and actinomycosis. Thus they argued that the utilization of PET/CT to rule out malignancy did not seem to be necessary, unless the case is strongly suggestive of malignancy.

Renal actinomycosis is mostly found by symptoms of acute pyelonephritis and demonstrated a tumor-like lesion on the CT scan. The correct preoperative diagnosis of renal actinomycosis is rarely made and most of diagnosis is made on specimens of nephrectomy.5 If the diagnosis is made preoperatively, it can treat high dose penicillin administered over a prolonged period (6-12 months).6 Doxycyclin, clindamycin, amoxicillin/clavulanate and ceftriaxone can be used if the patient has penicillin allergy or resistance.7

In this case, we predicted that xanthogranulomatous pyelonephritis accompanying staghorn calculi were causes of symptoms, signs, laboratory findings and anatomical abnormality. Surgical debridement combined with long-term antimicrobial therapy have cured most cases of the renal actinomycosis until now, however if we can find more accurate diagnostic tools of the actinomycosis, they are more helpful for patients and surgeons.

REFERENCES