Acute renal failure and renal papillary necrosis following instillation of silver nitrate for treatment of chyluria

S. C. Dash1, Y. Bhargav1, S. Saxena1, S. K. Agarwal1, S. C. Tiwari1 and A. Dinda2

Departments of 1Nephrology and 2Pathology, All India Institute of Medical Sciences (AIIMS), New Delhi, India

Key words: acute renal failure; chyluria; haematuria; silver nitrate instillation

Introduction

Chyluria is a common problem in South East Asia especially in India, Hong Kong, Japan, and Taiwan [1]. In endemic areas approximately 10% of population are infected with Wuchereria bancrofti, of whom 10% have chyluria. Although on most occasions chyluria is of parasitic origin, there could be non-parasitic causes (tuberculosis, malignancy, post-traumatic). Several therapeutic options are practised, one such method is instillation of sclerosing agents into the renal pelvis. We report a patient who developed severe acute renal failure following bilateral instillation of silver nitrate into the renal pelvis. She also developed gross haematuria due to renal papillary necrosis in the left kidney.

Case report

A 38-year-old woman developed anuria on 30.7.95 almost immediately after instillation of an unspecified quantity of 3% silver nitrate solution into each renal pelvis. Two days later she developed gross haematuria, and was transferred to the Nephrology Department, New Delhi. The procedure had been conducted in her home town under spinal anaesthesia in an attempt to treat a 10-year-old problem of chyluria. There was no hypotension during anaesthesia. She had no history suggestive of abdominal tuberculosis or filarial lymphangitis, nor did she have a past history of abdominal surgery or trauma.

Physical examination on admission revealed mild oedema and signs of circulatory overload. The patient had moderate anaemia and her temperature remained elevated between 37 and 38°C throughout the hospital stay. There was a soft systolic murmur at the apex, and bilateral crepitations at the lung base. Diagnosis of acute renal failure following silver nitrate instillation was made. The possibility of acute renal papillary necrosis was kept in mind in view of gross haematuria. The patient remained anuric for 10 days, and gross haematuria continued for 12 days.

On investigation, the haemogram revealed Hb of 9.2 g% (92.0 g/l) with a TLC of 14600/mm3 (14.6, 10 9/1) DLC-P 72%, L25%, E3%. Reticulocyte count, 1.5%; there was no evidence of intravascular haemolysis. Platelet counts varied between 1.2 and 2.3 lac/mm3, (120-230 x 10^9/l). The urine was grossly haemorrhagic; microscopy revealed fields densely packed with RBC. Renal function on admission: blood urea 180 mg%, serum creatinine 10.5 mg%, sodium 137 mmol/l, and potassium 4.5 mmol/l. Blood pH was 7.35, pCO₂ 24.6 mmHg, pO₂ 81.0 mmHg, HCO₃ 13.4 mmol/l with a base deficit of 9.5 mmol/l. Chest X-ray showed mild pleural effusion on the left side. Biochemistry of pleural fluid showed protein of 3.4 g% and 50 lymphocytes/mm³. Plain X-ray of kidneys showed a bilateral radio-opacity outlining the pelvicalyceal system and upper ureters. Lower calyces on the left side showed damage and cavitation suggestive of necrosis of renal papillae (Figure 1).

Ultrasonogram showed that right and left kidneys were 11.1 and 11.5 cm respectively, with splitting and distortion of left lower polar calyceal systems. The echogenicity of the pelvicalyceal system was increased. A large blood clot was found in the urinary bladder. On computed tomography, the above findings were confirmed in form of material of high attenuation outlining the bilateral pelvicalyceal system and ureters. In addition, multiple small retroperitoneal lymph nodes were seen in para-aortic and left renal hilar locations (Figure 2).

The patient received three haemodialyses and other supportive treatment for her anuric state. Percutaneous renal biopsy revealed features of resolving acute tubular necrosis (Figure 3). Ten days after admission she entered a diuretic phase and a month later blood urea and creatinine were 40 mg% and 1.6 mg% respectively, with a 24-h urine volume of 3.4 litres.

© 1996 European Renal Association–European Dialysis and Transplant Association
In view of pyrexia, paraortic and renal hilar lymphadenopathy, exudative pleural effusion, and positive Mantoux test a diagnosis of tubercular pleural effusion and chyluria due to retroperitoneal lymphadenopathy was made. The patient was put on antituberculous treatment at the time of discharge from the hospital.

Discussion

The passage of milky urine is an alarming sign. Several methods of treatment have been used, including avoidance of fat products in the diet and medium-chain triglyceride-rich diet, renal pelvic instillation with sclerosing substances such as 0.5% silver nitrate, a shunt operation from the retroperitoneal lymphatics to the spermatic vein, surgical stripping, and interruption of lymphatics. In one study [1], 46 patients who received renal pelvic instillation of 10 ml 0.5% silver nitrate solution had complete remission of chyluria in 80%. In another large study [2] of 888 patients, the authors experienced initial control of chyluria in 60%, but there was recurrence in one-half in a 2-year period. Intrarenal silver nitrate instillation therapy has been recommended as safe and effective when used in 0.5–1.0% concentration, as was done in two of the above studies.

Preferably one side should be treated at a time with an interval of 6 weeks between instillations [3]. In the present case, solution with higher concentration (3%) and of unknown quantity was used, which may explain development of acute renal injury, leading to acute tubular necrosis and acute renal failure. Silver as a cause of acute renal failure has been described among film developers [4]. Experimentally it can be shown that silver precipitates in the interstitium of rabbits that manifest tubular degeneration and interstitial oedema, and at high doses necrosis of renal papilla as well [5].

References


Received for publication: 10.3.96
Accepted in revised form: 13.5.96