Unusual cause of obstructive uropathy: bilateral steinstrasse

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Accepted 25 May 2018

DESCRIPTION

A 45-year-old man presented with decreased urinary output (<150 mL per 24 hours), anorexia, nausea and bilateral flank pain for 1 week. His serum creatinine potassium were 12.9 mg/dL and 6.0 mEq/L, respectively. He had no associated comorbidity. He had history of bilateral renal pelvic stones for which he underwent extracorporeal shock wave lithotripsy (ESWL) 2 months back, first for the right kidney (single session) then 2 weeks later for the left kidney (single session). His renal function was normal before undergoing ESWL (serum creatinine 0.9 mg/dL). No check X-ray had been done after ESWL. A plain X-ray was done that showed bilateral steinstrasse (figure 1) and on ultrasonography he had hydronephrosis in both kidneys. This caused acute renal failure due to obstructive uropathy. He was taken up for haemodialysis urgently. After two sessions of haemodialysis, he was taken up for stenting of bilateral ureters. After stenting, his renal function gradually improved and his serum creatinine level decreased to 1.1 mg/dL within 9 days. He was maintained on the stents for 1 month. Another check X-ray was done and the stone fragments in both the ureters had passed. His ureteral stents were subsequently removed and the patient is now doing fine.

Figure 1 Plain X-ray showing steinstrasse in bilateral lower ureters (arrows).

A well-known complication of ESWL is steinstrasse (or stone street). Usually, steinstrasse is asymptomatic and spontaneously resolves as the broken fragments of the stone pass from the ureter into the urinary bladder. Ureteral stenting before ESWL may prevent steinstrasse but is not indicated routinely due to the morbidity of ureteral stent-related symptoms. Steinstrasse causes complications when the stone particles remain static in the ureter and cause obstruction leading to upstream urinary tract dilation and subsequent symptoms like loin pain. The urinary tract is obstructed and also this may be a cause of urosepsis. The bacteria liberated from the fragmented stones may enter the bloodstream leading to sepsis.[1]

Steinstrasse usually occurs when a large stone is subjected to ESWL. Other important factors are the energy of the lithotripter used (as higher initial energy causes more steinstrasse) and calibre of the ureter (steinstrasse is common in lower ureters due to narrowing at vesicoureteral junction).[2] The European Association of Urology has given certain recommendation for management of steinstrasse. When stone size is larger than 1.5 cm, then insertion of ureteral stent before ESWL has been recommended to prevent steinstrasse. Conservative management with medical expulsion therapy increases the stone expulsion rates in steinstrasse. If there is no urinary tract infection (UTI), then ESWL of stone fragments may be done. If steinstrasse is symptomatic and/or there is evidence of UTI, then ureteral stenting or percutaneous nephrostomy placement is advised. Ureteroscopy

Learning points

- Steinstrasse after extracorporeal shock wave lithotripsy is usually asymptomatic, but when the fragments become static in the ureter, they cause complications such as loin pain, obstruction and urosepsis, so these patients should be actively followed up until steinstrasse resolves.
- Risk factors for development of steinstrasse include larger stone size, higher initial energy of lithotripter and narrow ureteral calibre.
- Most of the times, steinstrasse resolves with conservative management, but if it persists, then intervention in the form of ureteral stenting, percutaneous nephrostomy, ureteroscopy and even open surgery may be required.

To cite: Garg G, Pandey S, Agarwal S, *et al*. *BMJ Case Rep* Published Online First: [*please include* Day Month Year]. doi:10.1136/bcr-2018-225578

is useful to remove the stone fragments in refractory cases and open surgery is rarely required.[3] Routine imaging after ESWL is done at almost all centres, and if steinstrasse is seen in them, the patient should be carefully followed up so that any complication that may arise due to steinstrasse be prevented or dealt with at the earliest.

Contributors GG conceived the case report. SP and GG were major contributors towards writing the manuscript. GG, SS and SA treated the patient and also interpreted the patient data. SP and SS were involved in the review. All authors read and approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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