CASE REPORT

Disappearing renal calculus

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SUMMARY

We present a case of a renal calculus treated solely with antibiotics which has not been previously reported in the literature. A man with a 17 mm lower pole renal calculus and concurrent *Escherichia coli* urine infection was being worked up to undergo percutaneous nephrolithotomy. However, after a course of preoperative antibiotics the stone was no longer seen on retrograde pyelography or CT imaging.

pyelography (figure 2B) and therefore PCNL was not performed.

OUTCOME AND FOLLOW-UP

A follow-up CT scan showed that the lower pole stone was no longer present (figure 1B). The patient was advised to continue low-dose antibiotics and is presently on urology follow-up with no recurrence of symptoms.

BACKGROUND

Management of renal tract stones encompasses both surgical and medical management. In the case of infection stones, antibiotic treatment is important before undertaking any interventional procedures but has not previously been shown to treat the stone itself. It is important to recognise the benefit of treating early with the appropriate antibiotics and that infection stones can form with non-urease producing bacteria such as *Escherichia coli*.

CASE PRESENTATION

A healthy 40-year-old man presented with 2 months history of offensive smelling urine with proven *E coli* urinary tract infection. He otherwise had no other lower urinary tract symptoms and no personal or family history of renal tract calculi.

INVESTIGATIONS

Serum calcium and uric acid levels were not raised. His flow rate reached a maximum of 22 ml/s and his postvoid residual was 40 ml. Renal tract ultrasound found mild right hydronephrosis and a subsequent CT scan revealed a 17 mm calculus in the lower pole of the right kidney (figure 1A). Given the finding of hydronephrosis which could not be explained by a lower pole stone, it was agreed at our radiology meeting to perform a technetium 99m mercaptoacetyl triglycine(MAG-3) renogram. This demonstrated equal split function and prompt drainage bilaterally. Right retrograde pyelography confirmed a filling defect in the lower pole corresponding to the location of the stone with no structural cause for the hydronephrosis (figure 2A).

TREATMENT

The decision was made with the patient to perform percutaneous nephrolithotomy (PCNL). The patient was started on low-dose trimethoprim, for which the *E coli* was sensitive to, for the 2 months while on the waiting list as it was presumed that this stone was related to recurrent urinary tract infections. At the time of PCNL, initial ultrasound showed no stone. This was confirmed on retrograde

Figure 1 (A) CT scan of right renal lower pole stone at presentation, (B) CT scan at follow-up showing right-lower pole no longer present after antibiotic treatment.

To cite: Cui H, Thomas J, Kumar S. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-008701

Figure 2 (A) Right retrograde pyelography showing filling defect corresponding to location of lower pole stone and (B) right retrograde pyelography after a course of antibiotics showing no persisting filling defect in location of previously seen stone.

DISCUSSION

We present an unusual case of a large renal stone treated solely with antibiotics. This has not been previously reported in the literature. Infection stones are traditionally thought to form secondary to urease producing bacteria and are typically composed of ammonium, phosphate and magnesium.¹ Unfortunately due to its disappearance, there was no stone for analysis. However, it was unlikely to have been a uric acid stone as the patient had

no predisposing metabolic conditions and no specific treatment was given to alkalinise his urine.

In our case the patient grew *E coli* from his urine culture. This makes the likelihood of this being a urease producing organism low, even though up to 5% of *E coli* may produce urease. Indeed, Hugosson *et al* found urease producing bacteria in only 48% of infection stones. When they analysed the urine of patients with calcium oxalate stones, 32% were found to be infected.² It may therefore be inferred that infection stones can form in the presence of non-urease producing bacteria, as must be the case here.

Our patient was started on prophylactic antibiotics prior to his planned treatment with PCNL as per the European Association of Urology guidelines.³ Prophylactic antibiotics have been shown to reduce the incidence of postoperative urinary tract infections and sepsis following PCNL.⁴ Antibiotics are started before treatment with the aim to prevent sepsis, but have not been previously shown to reduce the size of the stone alone.

Our case shows that timely culturing of urine in a patient with an infection stone allows the causative organism to be identified early and targeted with the correct antibiotic. Elimination of the bacteria responsible here has possibly corrected the factors which led to stone formation and, we believe, ultimately treated the stone without need for more invasive surgical intervention.

Learning points

- ▶ Urine culture is a useful investigation when managing patients with renal tract calculi as it may indicate an infection stone.
- ▶ Infection stones can form in the presence of non-urease producing bacteria.
- ▶ Antibiotic prophylaxis is recommended before percutaneous nephrolithotomy and is especially important in the context of an infection stone.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Moe OW. Kidney stones: pathophysiology and medical management. *Lancet* 2006;367:333–44.
- 2 Hugosson J, Grenabo L, Hedelin H, *et al*. Bacteriology of upper urinary tract stones. *J Urol* 1990;143:965–8.
- 3 Turk C, Knoll T, Petrik A, *et al*, eds. Guidelines on urolithiasis. 27th Annual EAU Congress. Paris, 2012.
- 4 Zanetti G, Paparella S, Trinchieri A, *et al*. Infections and urolithiasis: current clinical evidence in prophylaxis and antibiotic therapy. *Arch Ital Urol Androl* 2008;80:5–12.

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