

dicated in the case of patients with idiopathic sudden death. Our diagnosis was based on the clinical evidence available, and we accept the fact that alternative diagnoses were not definitively excluded. Had this patient had a meaningful neurologic recovery, further testing would have been performed.

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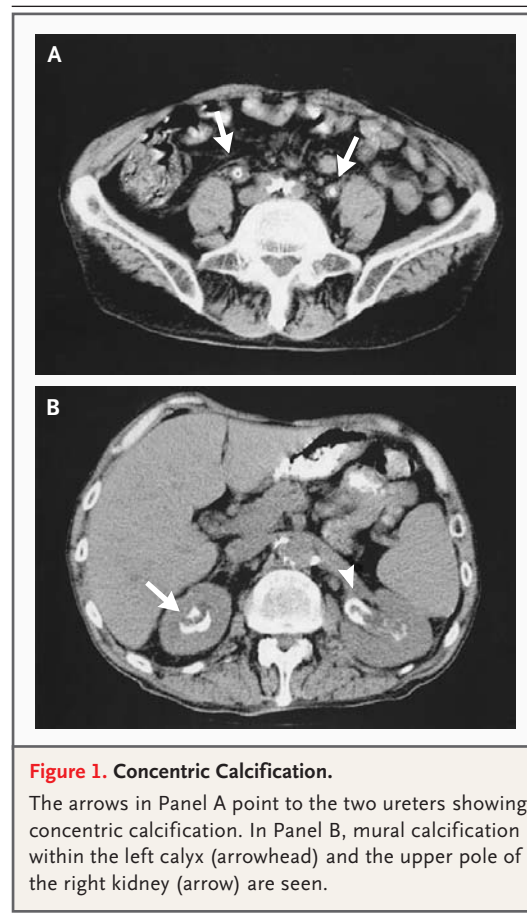
Medical Mystery: Concentric Calcification — The Answer

TO THE EDITOR: The patient in the medical mystery in the February 2 issue¹ had encrusted pyeloureteritis and cystitis caused by *Corynebacterium urealyticum*. Multiple urine cultures revealed the presence of corynebacterium species that were subsequently shown to be *C. urealyticum*. The clues to the correct diagnosis were the results of multiple urinalyses that showed persistently alkaline urine and the presence of triple phosphate crystals and concentric calcification of the ureters as seen on computed tomographic scanning of the pelvis. In addition, the “contaminants” in the urine were presumed to have been diphtheroids (common skin flora) but were actually *C. urealyticum*, which was isolated from 10 urine cultures performed over the course of the previous nine months.

Bilateral nephrostomy tubes were placed for the treatment of intermittent urinary obstruction. The patient received three weeks of intravenous vancomycin, which led to resolution of the hematuria and eradication of the *C. urealyticum*. His renal function improved, and he was discharged to a nursing home. He subsequently died from complications of aspiration pneumonia.

C. urealyticum is a gram-positive, aerobic, urease-positive bacterium with a diphtheroid morphology. It is one of several urea-splitting bacteria (including *Proteus mirabilis*), which can transform urea to ammonia, creating alkaline urine. This process can result in a predisposition to the precipitation of struvite and calcium phosphate crys-

tals, which can lead to the formation of kidney stones (Fig. 1A) and encrustation throughout the



urinary tract (Fig. 1B). Pyelitis and cystitis result from chronic inflammation.

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Editor's note: We received 457 responses to this medical mystery: 60 percent from physicians in practice, 20 percent from physicians in training, and 14 percent from medical students. The responses came from 53 countries; 81 percent correctly identified calcifications in the genitourinary tract: 19 percent specifically identified encrusted pyelitis from chronic infection with corynebacte-

rium species or proteus species, 24 percent suggested calcifications of the genitourinary tract without proposing a specific etiology, 28 percent suggested a genitourinary tract infection due to tuberculosis infection or schistosomiasis, and 10 percent suggested metabolic diseases, such as hypercalciuria, hyperparathyroidism, or renal tubular acidosis.

Other diagnoses suggested by the remaining 19 percent of the respondents included vascular calcifications, malignancy, and retained catheters. Be aware of the "contaminant."

1. Kim DHD, Yu VL. A medical mystery — concentric calcification. *N Engl J Med* 2006;354:508.

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