Unilateral staghorn calculus

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Staghorn renal calculi can branch out and fill the whole renal pelvis and collecting system, causing obstructive and infective symptoms in patients.[1] Staghorn stones get their name from the space-filling shape found on imaging and gross renal evaluation, which resembles antlers on a deer, and have also been referred to as coral calculi.[2] These stones typically present unilaterally and are often composed of struvite (magnesium ammonium phosphate) or calcium carbonate appatite.[2] A common etiology of struvite stones involves alkalization of urine from increased urinary ammonia, usually due to the presence of a urease-producing microorganism.[3] The urease found in these organisms splits urinary urea into ammonia, which then hydrolyzes to bicarbonate and ammonium.[3]

The image displays a 5.0 cm × 3.5 cm staghorn calculus that nearly encompasses the entire left renal pelvis and calyceal system (Figure). The first-line management of staghorn calculi includes percutaneous nephrolithotomy; secondary options include percutaneous nephrolithotomy with extracorporeal shock wave lithotripsy or ureteroscopy with laser lithotripsy.[3] To prevent staghorn calculi recurrence, patients should adhere to a low phosphate and calcium diet paired with an estrogen supplement in women and aluminum gel. In addition, acetohydroxamic acid, a urease inhibitor, has proven useful to interrupt struvite stone growth but does carry the risk of serious systemic side effects, such as hemolytic anemia, myelosuppression, and superficial thrombophlebitis.[3]

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Figure. Noncontrast CT displaying left renal staghorn calculus.

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