

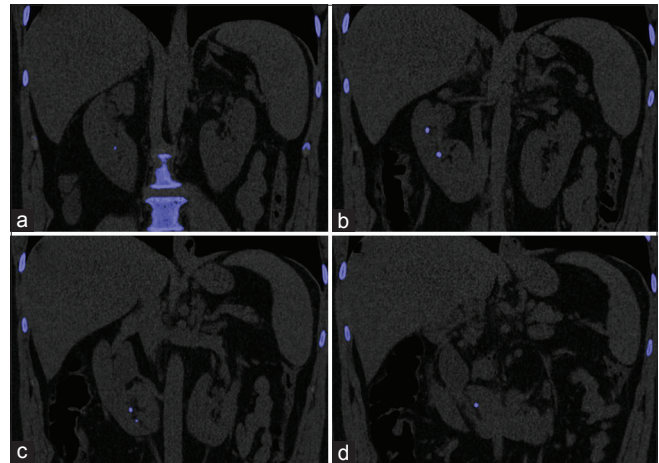
## Recurrent renal calculi in coexistence of horseshoe kidney and medullary sponge kidney

Sir,

Horseshoe kidney is the most common congenital renal fusion anomaly, with an incidence of 1 every 400–1600 births.<sup>[1,2]</sup> Kidney stones are common in patients with horseshoe kidney with a reported incidence ranging approximately from 20% to 80%.<sup>[1,3]</sup> Although altered anatomy-related impaired urinary drainage is a proposed explanation for the kidney stone formation in patients with horseshoe kidney,<sup>[1,3]</sup> its exact underlying mechanism is still unclear. Hereby, we present a 34-year-old male with recurrent kidney stones. The patient was found to have horseshoe kidney and the suggestive findings of probable medullary sponge kidney (MSK) with distal renal tubular acidosis.

The patient presented to kidney stone clinic with a history of recurrent multiple kidney stones for the past 20 years, for which he had multiple shock wave lithotripsies. Stone analyses and urine supersaturation study were performed, which demonstrated primarily calcium phosphate and evidence suggesting a renal acidification defect due to probable MSK. Serum creatinine is normal at 0.9 mg/dL. The patient was also intermittently hypercalciuric and hypocitraturic, common abnormalities seen in MSK. Abdomen computed tomography (CT) without contrast showed horseshoe kidney with multiple calculi at the medullary pyramid tips in the right moiety and few tiny nonobstructive calyceal tip calculi in the left moiety, suggestive of MSK. Dual energy CT characterization blue color coding showed that the stone element was nonuric acid in composition [Figure 1a-d]. The calculi on the left moiety were too small to characterize on dual energy CT. Potassium citrate was started. Dietary consultation was also obtained. Despite being surgically inactive, the patient had developed new stones in the right moiety, and some of the old stones were larger at 10-year follow-up.

In addition to impaired urinary drainage due to ureteral anatomy in patients with horseshoe kidney, our case presentation and previous reports have demonstrated coexistent horseshoe kidney with MSK.<sup>[4,5]</sup> Since MSK can be simply missed because



**Figure 1:** (a-c) Abdomen computed tomography without contrast demonstrated horseshoe kidney with multiple calculi seen at the medullary pyramid tips in the right moiety, suggestive of medullary sponge kidney. (a-d) Dual energy computed tomography characterization blue color coding indicated that the stone material was nonuric acid in composition

intravenous urography is not used as often as it used for the investigations for kidney stones,<sup>[6,7]</sup> physicians should be aware of this potential coexistence and future study is warranted.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

Wisit Cheungpasitporn, Aditya S. Pawar,  
Stephen B. Erickson

Division of Nephrology and Hypertension, Mayo Clinic, Rochester,  
MN, USA

### Address for correspondence:

Dr. Wisit Cheungpasitporn,  
Mayo Clinic, 200 First Street SW, Rochester, MN 55905, USA.  
E-mail: wcheungpasitporn@gmail.com

### REFERENCES

1. Ishii H, Rai B, Traxer O, Kata SG, Somani BK. Outcome of ureteroscopy for stone disease in patients with horseshoe kidney: Review of world literature. *Urol Ann* 2015;7:470-4.
2. Weizer AZ, Silverstein AD, Auge BK, Delvecchio FC, Raj G, Albala DM, et al. Determining the incidence of horseshoe kidney from radiographic data at a single institution. *J Urol* 2003;170:1722-6.
3. Muttarak M, Sriburi T. Congenital renal anomalies detected in adulthood. *Biomed Imaging Interv J* 2012;8:e7.
4. Irisawa C, Yamaguchi O, Shiraiwa Y, Kikuchi Y, Irisawa S, Irisawa C. A case

of medullary sponge disease associated with horseshoe kidney. Nihon Hinyokika Gakkai Zasshi 1990;81:1255-7.

5. Lambrianides AL, John DR. Medullary sponge disease in horseshoe kidney. Urology 1987;29:426-7.
6. Cheungpasitporn W, Erickson SB. Medullary sponge kidneys and the use of dual-energy computed tomography. Urol Ann 2015;7:129.
7. Cheungpasitporn W, Thongprayoon C, Brabec BA, Kittanamongkolchai W, Erickson SB. Outcomes of living kidney donors with medullary sponge kidney. Clin Kidney J 2016;9:866-70.

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<b>Quick Response Code:</b>	<b>Website:</b> www.urologyannals.com
	<b>DOI:</b> 10.4103/UA.UA_173_16

<p><b>How to cite this article:</b> Cheungpasitporn W, Pawar AS, Erickson SB. Recurrent renal calculi in coexistence of horseshoe kidney and medullary sponge kidney. Urol Ann 2017;9:214-5.</p>
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