

## A Case of Acute Pyelonephritis in Bilateral Renal Malrotation

Ha Yeon Kim<sup>1</sup>, Seung Jin Lee<sup>2</sup>, Eun Hui Bae<sup>1</sup>, Seong Kwon Ma<sup>1</sup>, and Soo Wan Kim<sup>1,\*</sup>

Departments of <sup>1</sup>Internal Medicine, <sup>2</sup>Radiology, Chonnam National University Medical School, Gwangju, Korea

A 71-year-old woman was admitted complaining of left flank pain, and presented with oliguria and hypotension. Pyuria and severe sepsis led to the diagnosis of acute pyelonephritis. An abdominal computed tomography intravenous pyelogram revealed normal-sized kidneys, however, the differentiation between cortex and medulla was poorly determined. The left kidney showed an amorphous, low attenuation lesion that was consistent with acute pyelonephritis (Fig. 1A). Both kidneys were incompletely malrotated and anteriorly facing hila were observed. The renal vessels and ureter were located laterally. The right kidney was 5 cm lower than the left kidney, indicating renal ectopia. Mild dilation was found at the proximal ureter of the left kidney. Additionally, a three-dimensional computed tomography reconstruction image showed anteriorly rotated kidneys (Fig. 1B). The patient initially received piperacillin-tazobactam empirically, then switched to cefotaxime after detecting an *E. coli* infection in the bloodstream. Three days later, her hemodynamic state had improved, and she was released from the intensive care unit.

Malrotation of the kidney may cause partial obstruction of the ureteropyelic junction, which can cause increased incidences of urolithiasis and infection.<sup>1</sup> In our case, the patient had a dilated left ureter (not shown) associated with mild obstruction due to a ureteral deformation and renal malrotation. We assumed that these abnormalities were responsible for her recurrent urinary tract infections as

well as the acute pyelonephritis with septic shock. To our knowledge, this is the first case report of a patient diagnosed with septic shock due to acute pyelonephritis associated with renal malrotation. Furthermore, in patients with recurrent urinary tract infections, thorough image evaluation and assessment of risk factors is important. The abdominal computed tomography intravenous pyelogram is a demonstrably useful diagnostic evaluation tool in patients with renal anomalies.

### ACKNOWLEDGEMENTS

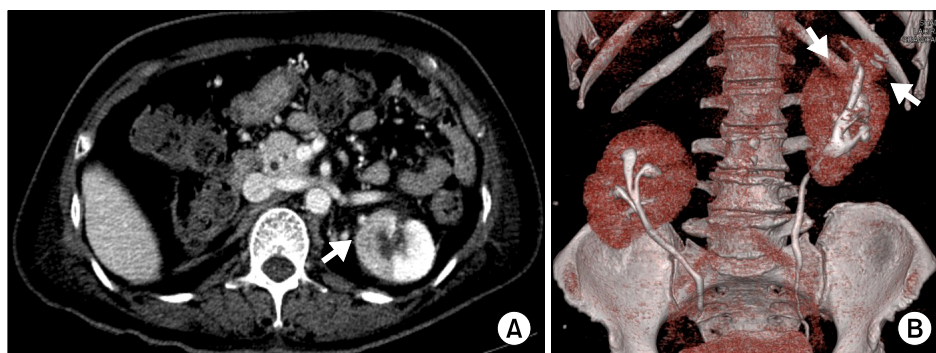
This study was supported by a grant (CRI16013-1) Chonnam National University Hospital Biomedical Research Institute.

### CONFLICT OF INTEREST STATEMENT

None declared.

### REFERENCE

1. Patil ST, Meshram MM, Kasote AP. Bilateral malrotation and lobulation of kidney with altered hilar anatomy: a rare congenital variation. *Surg Radiol Anat* 2011;33:941-4.



**FIG. 1.** An abdominal computed tomography axial image shows wedge-shaped low attenuation lesions in the left kidney at the upper pole, suggesting acute pyelonephritis (A). A three-dimensional computed tomography reconstruction image show anteriorly rotated bilateral kidneys (B).

### Corresponding Author:

Soo Wan Kim

Department of Internal Medicine, Chonnam National University Medical School, 42 Jaebong-ro, Dong-gu, Gwangju 61469, Korea. Tel: +82-62-220-6271, Fax: +82-62-225-8578, E-mail: skimw@chonnam.ac.kr

### Article History:

Received July 9, 2016

Revised July 20, 2016

Accepted July 26, 2016