Hypertrophied column of Bertin: a renal tumour mimicker

A 22-year-old female patient was referred to our hospital for renal biopsy due to suspicion for a left renal mass. On examination, she had minimal left flank pain and no haematuria. She had no history of stones in the urogenital tract, but she had lung tuberculosis with a completed 6-month treatment.

Imaging Findings:

The patient was referred for CT urography which demonstrated an isoattenuation area in the cortical region in the upper-mid pole of the left kidney which protruded into the renal sinus. (Fig. 1, 2) During the corticomedullary and nephrographic phase, it was having the same attenuation and enhancement pattern like normal renal cortex. Additionally, a small right renal stone was also found in the right renal calyx (Fig. 3).

Discussion:

Normal anatomical variants in the kidney can mimic renal mass thus leads to diagnostic errors and unnecessary biopsy or nephrectomy in some conditions. [1] Masses that consist of normal or benign renal tissue are referred as renal pseudo-tumours. The various aetiologies of renal pseudo-tumours are developmental disorder, infection, granulomatous disease and vascular in nature. [2] In this case, we report a developmental disorder, called hypertrophied column of Bertin (HCB) in a 22-year-old female patient who was suspected to have a renal mass. Hypertrophied column of Bertin, or focal cortical hyperplasia, is defined as bands of hypertrophic cortical tissue located between the pyramids of the renal medulla. [2, 3] It often invaginates into the renal sinus, and is most often located between upper and middle calyces. It is also frequently found unilaterally on the left side. [3] HCB is found in 47% of normal subjects and can be found bilateral in 18% of cases. In 4% of cases, two columns are found in the same kidney. [4]

HCB was named after the French anatomist Exupere Joseph Bertin (1712-1781) who described a renal cortical substance that extends towards the renal pelvis and thus separates the medullary pyramids. [1] Radiologically, HCB usually appears as a mass that protrudes towards renal sinus and can be mistakenly reported as a tumoral lesion. Therefore recognizing imaging characteristics of HCB could avoid unnecessary interventions, such as biopsy or surgery. [1] On CT urography, HCB is isodense with the normal parenchyma on non-contrast phase, and during the corticomedullary phase, it showed the same enhancement pattern as normal renal parenchyma. [1, 3]

Other imaging, such as colour Doppler ultrasound can be used to determine normal renal parenchyma by showing
normal vascular flow in the mass region. MRI and radionuclide scanning can also be a confirmatory imaging, by
demonstrating a normal functioning renal parenchyma in the mass area. [5]
In this case, after the CT urography showed that the left renal mass was hypertrophied column of Bertin, the
urologist aborted the renal biopsy and suggested extracorporeal shock wave lithotripsy (ESWL) for the right renal
stone.
**Differential Diagnosis List:** Hypertrophied column of Bertin, Focal cortical hyperplasia, Renal tumours, such as:
renal cell carcinoma, oncocytoma and angiomyolipoma, Other types of renal pseudotumour, Fetal lobation, Renal
scarring

**Final Diagnosis:** Hypertrophied column of Bertin, Focal cortical hyperplasia

**References:**

(PMID: [25610298](https://www.ncbi.nlm.nih.gov/pubmed/25610298))


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Figure 1

Description: MSCT coronal unenhanced phase

Origin: Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
Description: MSCT coronal corticomedullary phase

Origin: Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
**Description:** MSCT coronal nephrographic phase **Origin:** Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
Description: MSCT axial unenhanced phase
Origin: Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
Description: MSCT axial unenhanced phase
Origin: Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
Figure 3

Description: MSCT scan axial unenhanced phase

Origin: Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
Description: MSCT scan axial corticomedullary phase  
Origin: Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
Description: MSCT scan axial nephrographic phase  
Origin: Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia
**Description:** MSCT scan axial delayed phase  
**Origin:** Department of Radiology, Dr. Kariadi Central Hospital, Semarang, Indonesia