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Hypertrophic Column of Bertin: a renal tumor mimicker



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ABSTRACT

Background: The hypertrophic column of Bertin is one of the congenital variants of the kidney. It's a rare case and is usually found as an incidental finding from renal ultrasound. Its characteristic of the finding may mimic a solid mass from an Ultrasound (US). Further examination may lead to unnecessary interventional or surgical procedures.

Case Presentation: We reported a patient with a suspected left renal mass from the ultrasound finding, and the CT urography with contrast revealed that the lesion is a hypertrophic column Bertin (HCB).

Conclusion: It's really important for clinicians and radiologists to know the characteristic findings of Bertin's Hypertrophic column to prevent unnecessary biopsy and surgical procedures.

Keywords: Hypertrophic Column Bertin, Renal Pseudotumor, Ultrasound, CT-scan.

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INTRODUCTION

The hypertrophy column of Bertin is one of the congenital variants that mimic a renal tumor. The column of Bertin is a cortical substance (septa) that extends towards the renal pelvis and separates the medullary pyramid. It was named after a French anatomist, Exupere Joseph Bertin (1712-1781), who described that renal cortical substances extend through pyramids.¹ It's a rare congenital anomaly and usually an incidental finding as a hypoechoic lesion extends towards the renal sinus and sometimes has heterogeneous echogenicity on ultrasound exam, which is reported as a tumoural lesion.

Widespread use of imaging modalities such as ultrasonography, CT scan, and MRI to detect any problem within the abdomen has led to the incidentally finding of renal lesions, especially in the elderly, since the risk of renal cysts and malignancies increases with age.² This article discusses our Hypertrophic Column Bertin (HCB) case and how we differentiate it from other renal masses based on clinical and imaging examination based on the previous study.³

A solid mass or complex cyst finding usually needs further examination to determine whether it needs biopsy, surgical treatment, or further intervention.

It can lead to patient anxiety, costly exams, and even unnecessary procedures.² It's important for the radiologist to establish the most likely diagnosis based on imaging findings, especially for renal pseudotumor cases.

CASE PRESENTATION

We are reporting a case of 53 y.o patients who came for a medical check-up. From the ultrasound, it was incidentally found a hypoechoic lesion on the midpole of the

left kidney. He did not have hematuria or any other urinary complaints. He did not have any comorbidities or prior surgeries. He was not a smoker. A contrast-enhanced computed tomography (CT) scan was done to evaluate the left renal mass (Figure 1). On the CT scan, a small isodense projection was noted from the renal parenchyma into the renal sinus and was indenting the renal sinus in the mid-portion of the left kidney. In contrast to CT, there was a similar enhancement of the rest of the parenchyma. It was concluded

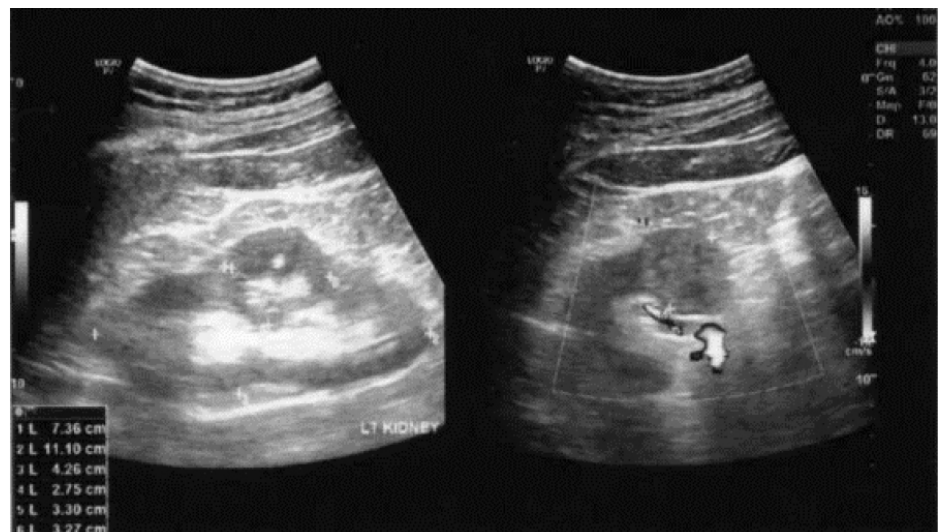


Figure 1. Evidence of focal hypoechoic lesion on left kidney mimicking a renal mass.

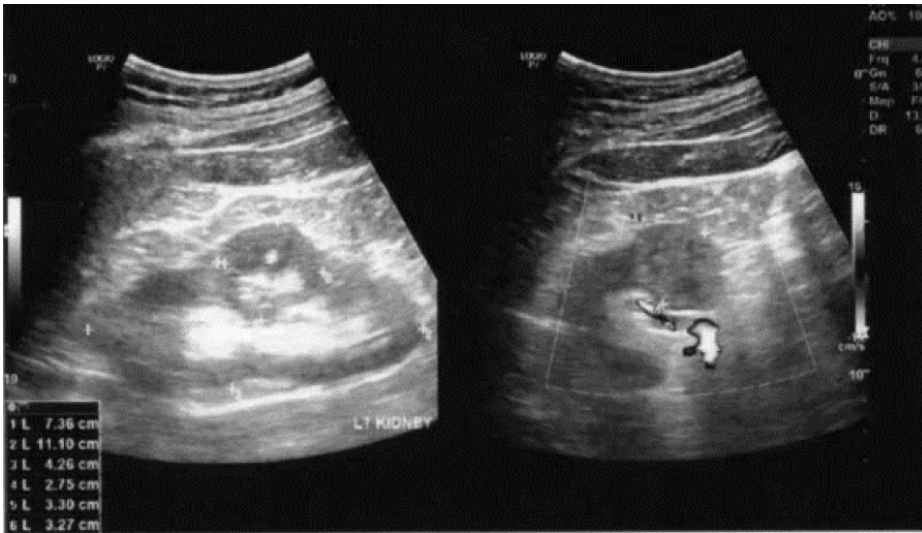


Figure 2. Evidence of a focal isodense bulging lesion on the left kidney (A); it has a similar contrast enhancement with adjacent parenchymal on corticomedullary phase (B), nephrogenic phase (C), and delayed phase (D).



Figure 3. In the coronal image, the lesion projecting from the medullary pyramid to the central sinus and giving mass effect is seen as a “split sinus sign” (arrow).

that the lesion is a Hypertrophic Column Bertin (Figure 2 and Figure 3).

DISCUSSION

Embryologic development problems of the upper urinary tract may lead to anomalies of renal form, position, number, and abnormalities in the urinary collecting system. The hypertrophic column of Bertin is one of the structural renal form anomalies. The etiology of this condition is related to the incomplete resorption

of the fetal sub-kidney fusion during the final stage of renal development. Since the two adjacent septa merge, persistent polar parenchyma with double thickness compared to adjacent normal parenchymal. It contains a normal cortex, pyramid, and column, so some authors suggest “junctional parenchyma” as another terminology for this anomaly. It is most commonly found in the middle third of the kidney, especially the left kidney.^{1,4,5}

Imaging modality that can be used for diagnostic HCB such as US, CT, MRI, and nuclear imaging. US examination is a safe, cheap, and widely used diagnostic tool but has an operator-dependent limitation. CT and MRI have higher sensitivity compared to the US. MRI has more sensitivity than a CT scan and doesn't have the risk of ionizing radiation. MRI is also the modality of choice if the patient has an iodine contrast allergy.^{3,6,7}

On ultrasound examination, the lesion has a smooth margin, similar echogenicity to the adjacent parenchyma, and lack of posterior acoustic enhancement, and sometimes, it may contain some hyperechoic area inside that may be seen depending on the interlobular vessels. The heterogeneous echo or hyperechoic lesion may be seen as anisotropic, so it may mimic a renal mass, as seen in our case. The lesion also projects from the medullary pyramids to the renal sinus and gives a mass effect internally that splits the

central sinus, seen as a “split sinus sign”. On Doppler ultrasound, the lesion has a similar arterial and venous flow pattern to adjacent parenchymal. The atypical finding of the lesion on US examination may lead clinicians to do further imaging evaluation such as CT or MRI as a diagnostic tool.¹

CT scan with contrast or MRI with contrast will show us the characteristic of the lesion has an identical enhancement pattern with normal kidney tissue in all phases/sequences. That characteristic was also seen in our case CT finding. The angiogram finding of Column Bertin will show normal renal vasculature without neovascularity. Nuclear imaging of the lesion reveals a uniform radiotracer uptake without any cold areas.^{3,8}

The differential diagnosis of Hypertrophic Column Bertin is Dromedary Hump. Dromedary hump appears as a focal bulge on the lateral border of the left kidney. It forms as a result of the adaptation of the kidney to the adjacent spleen, but it doesn't have any mass effect on the renal sinus. It can usually be easily diagnosed on sonography and has the same perfusion as the surrounding renal parenchyma on contrast-enhanced sonography.⁶

CONCLUSION

Appropriate imaging evaluation and understanding of the imaging characteristics of the renal pseudotumor, especially hypertrophic Column Bertin, could prevent invasive international or surgical procedures for the patient.

CONFLICT OF INTEREST

None.

ETHICAL CONSIDERATION

This case report has obtained ethical clearance from the Ethical Committee Udaya University RSUP Prof. Dr. dr. I.G.N.G Ngoerah.

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AUTHORS CONTRIBUTION

Each author of this report has an equal contribution.

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