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Hypertrophic Columns of Bertin: Imaging Findings

Hipertrofik Bertin Kolunu: Görüntüleme Bulguları

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Abstract

Hypertrophic column of Bertin (HCB) may mimic renal mass and may lead to unnecessary nephrectomy in some conditions. In this case report we present a patient with HCB, which mimics renal mass in ultrasonography (US) examination with its US, Doppler US and magnetic resonance imaging (MRI) findings. In contrast to the US, excretory urography (EU) and computed tomography (CT) findings of HCB, MRI findings of this entity could not take part in the literature sufficiently. We suggest that this case report could be useful in preventing the unnecessary biopsy and surgical procedures. In conclusion, however, US is often sufficient in the diagnosis of HCB, unusual lesions could be seen. In the final diagnosis of these lesions, MRI is very useful and more responsive technique. Understanding the imaging characteristics of HCB could prevent unnecessary interventional or surgical procedures.

Key Words: Hypertrophic column of Bertin, kidney, abnormalities, ultrasonography, magnetic resonance imaging, genitourinary imaging, biopsy

Özet

Hipertrofik Bertin kolunu (HBK), böbrek kitlelerini taklit edebilir. HBK tanısı doğru ve hızlı bir şekilde konulamaz ise gereksiz biyopsi veya nefrektomi yapılabilir. Bu vaka takdiminde, ultrason (US) incelemede böbrek kitlesi olarak yorumlanan ve tarafımıza biyopsi yapılması için gönderilen HBK'lı bir hastayı sunuyoruz. Hastanın Doppler US ve manyetik rezonans görüntüleme (MRG) bulguları, kitle olarak kabul edilen lezyonun HBK olduğunu net bir şekilde göstermiştir. Takip incelemelerde de lezyonun boyut ve karakter farklılığı göstermediği saptanmıştır. Literatürde HBK'nın Doppler US ve MRG bulguları ile ilgili yeterli bilgi bulunmamaktadır. Bu bulgularının iyi bilinmesinin; gereksiz tetkik, biyopsi veya nefrektomi sayısını azaltacağını düşünüyoruz. Sonuç olarak; HBK, renal kitleyi taklit edebilir. HBK; US, Doppler US ve MRG'de renal korteks ile aynı morfolojik özelliklere sahiptir. Görüntüleme bulguları ile HBK'dan şüphelenilen olguların, US ile takibi yararlı olacaktır.

Anahtar Kelimeler: Hipertrofik Bertin kolunu, böbrek, renal anomali, ultrason, manyetik rezonans görüntüleme, genitoüriner görüntüleme, biyopsi

Introduction

After French anatomist Exupere Joseph Bertin (1712-1781) described that renal cortical substance extends through pyramids in 1774, those cortical substances (septa) that separates the medullary pyramids and extends towards renal pelvis were named as columns of Bertin [1]. This entity was not known well by radiologists until the 1960s, although after the increasing knowledge about ultrasound (US), excretory urography (EU), and computed tomography (CT) it has become recognized better [2].

Conversely, columns of Bertin sometimes mimic renal tumours, and even unnecessary nephrectomies might be performed [1].

In this case report we present a patient with Hypertrophic column of Bertin (HCB), which mimics renal mass in ultrasonography (US) examination with its US, Doppler US and magnetic resonance imaging (MRI) findings. In contrast to the US, EU and CT findings of HCB, the MRI findings of this entity could not take part in the literature sufficiently [1-3]. We think that this case report could be useful in preventing the unnecessary biopsy and surgical procedures.

Case Report

A 55-year-old man was referred to our interventional radiology department for performing US guided biopsy from the mass of his right kidney. US examination revealed an isoechoic mass 25x15 mm in size which was placed in the middle part of the kidney and extended from cortex to the pelvis. There were hyperechoic areas inside of the mass. Doppler US demonstrated the vascularity of the mass. The patient had a history of iodinated contrast agent allergy. Contrast-material enhanced renal MRI was achieved. Informed consent was obtained.

Magnetic resonance imaging (MRI) showed that the mass was isointense with the renal cortex on all of the sequences (Figure 1). The renal mass and parenchyma were enhanced with contrast material and washed out simultaneously. Based

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on all of these findings, the mass of the right kidney was diagnosed as HCB, and US-MR examinations were recommended for 3 months afterwards.

There was no change in lesion size and characteristics in US and MR examinations performed after 3 months (Figure 2). Therefore, biopsy was not done and the patient was discharged with the recommendation of US follow up.

Discussion

Hypertrophic column of Bertin is a normal variant, and is the result of persistent polar parenchyma, which should be resorbed normally to form both sub-kidneys' typical renal morphology [2]. Conversely, the etiology of the HCB could not be completely clarified. Some authors name this entity junctional parenchyma [2].

Hypertrophic column of Bertin usually appears as a mass that extends towards renal sinus radiologically and an inexperienced radiologist could report it as a tumoural lesion. Sometimes it can show atypical characteristics, therefore CT or MRI might be needed for clarifying the diagnosis [4]. The exact incidence of HCB is not known, although it is a relatively rare entity [3, 4].

HCBs are typically seen as ovoid lesions that extend from the medullary pyramids to the renal sinus [5]. Although HCBs are often isoechoic with renal parenchyma, it might be hyperechoic [1, 5]. There could be some hyperechoic areas inside of the isoechoic mass. These hyperechoic areas are suggested to be seen depending on the interlobular vessels (such as interlobular arteries) [2]. HCB has vascular structures that show arterial and venous flow pattern similar to the vascularity of renal parenchyma on Doppler US [3]. However, there are no characteristic findings of HCB on US [2]. CT or MR examinations could be diagnostic and could prevent the unnecessary invasive procedures in patients with atypical looking mass, which could not be diagnosed accurately.

Hypertrophic column of Bertin is isodense/isointense with the normal renal parenchyma on non-contrast- and contrast-material enhanced CT or MR images and MRI examination is more sensitive than CT [2, 4]. HCB shows the same enhancement pattern with normal renal parenchyma on dynamic MRI, as in our case. In addition, MRI does not have a risk of ionizing radiation, which is an important advantage and therefore should be the technique of choice for children and teenagers. MRI is also problem solving in individuals that have iodinated contrast agent allergies.

In conclusion; US is often sufficient in the diagnosis of HCB, unusual lesions could be seen. In the final diagnosis of these lesions, MRI is very useful and a more approachable technique. Understanding the imaging characteristics of HCB could prevent unnecessary interventional or surgical procedures.

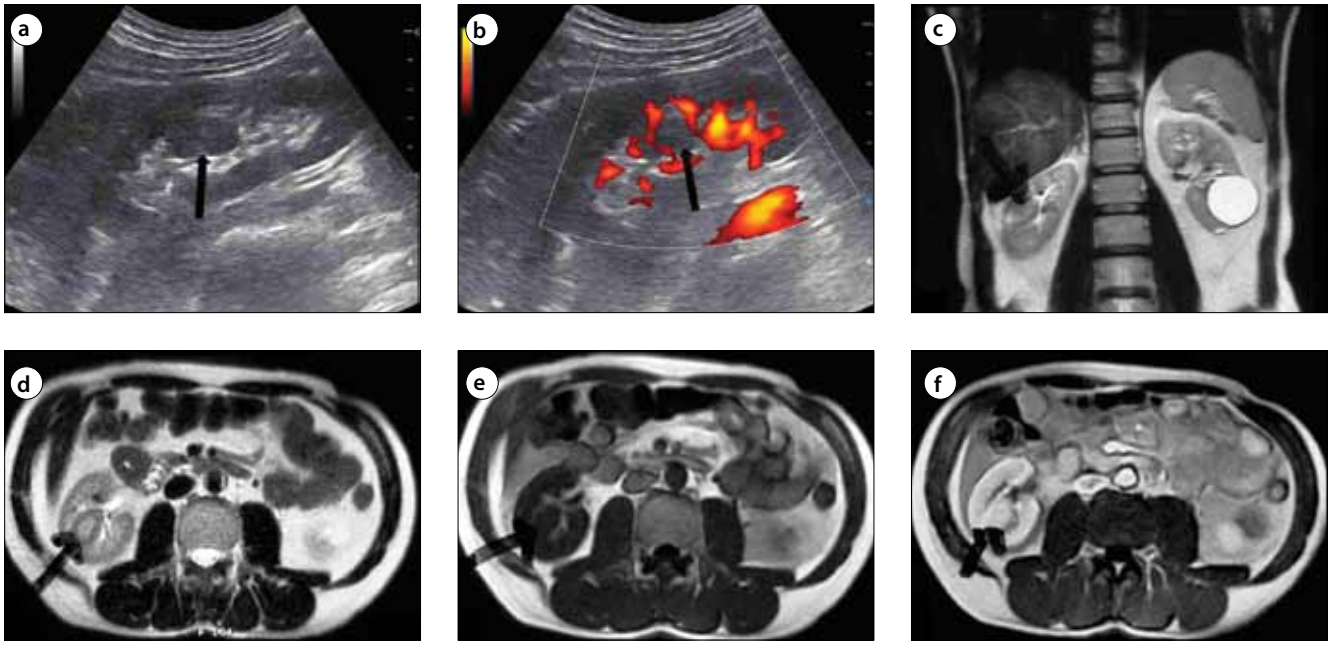

Figure 1. a-f. *US and MRI images at time of the presentation. In US examination a mass 25x15mm in size that extends from the cortex to the renal sinus could be seen (arrow) (a). Power Doppler US images demonstrates the vascularity inside and around of the lesion (arrow) (b). It was observed that the renal mass was isointense with the renal cortex on coronal T2W (c), axial T2W (d), axial T1W (e), and axial contrast-material enhanced (nephrogram phase) T1W (f) images (arrows).*

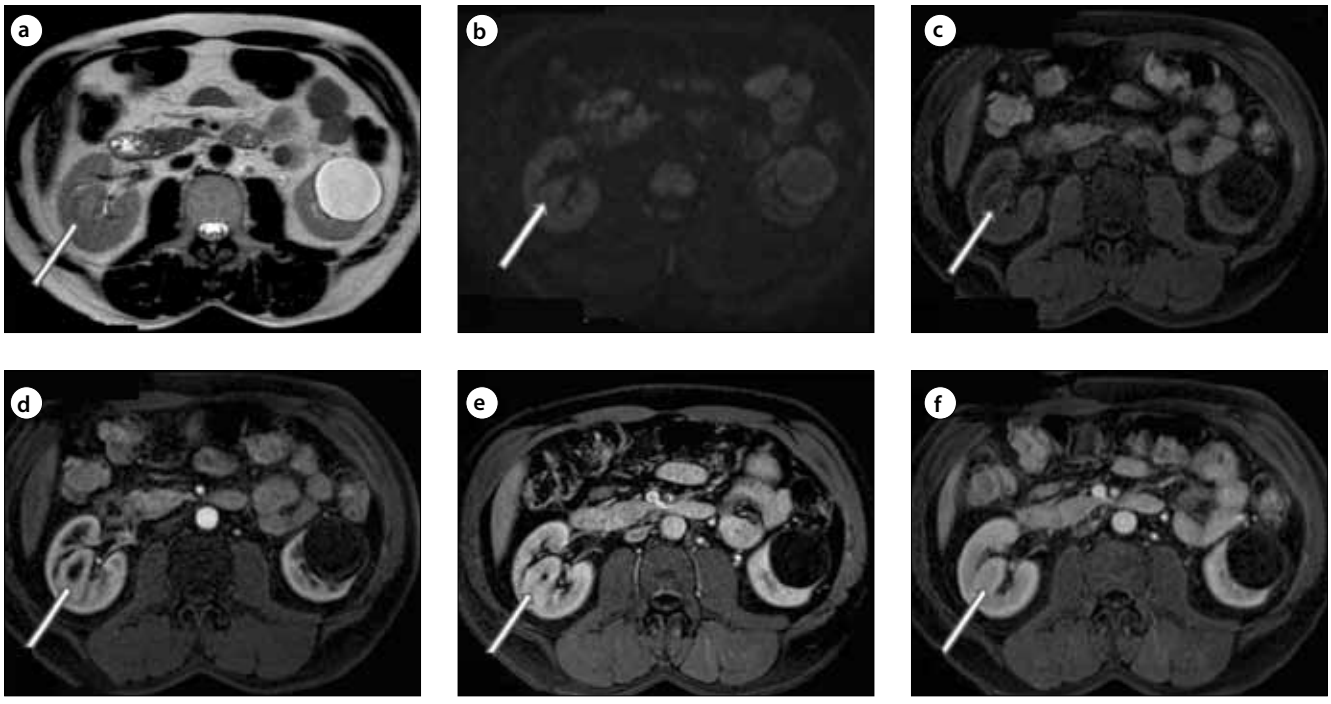

Figure 2. a-f. *The images taken in the 3rd month follow-up MR examination. There was no change in lesion size and morphologic appearance on axial T2W (a), diffusion weighted (B value: 800) (b), fat suppressed axial T1W (c), and axial post-contrast T1W (d-f) images (arrows).*

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