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Pancake Kidney In A Geriatric Patient: Radiologic And Scintigraphic Findings

Geriatrik Olguda Pankek Böbrek: Radyolojik ve Sintigrafik Bulgular

Alper Dilli[1], Ümit Yaşar Ayaz[2], İdil Güneş Tatar[1], Osman Raif Karabacak[3], Nihat Uluocak[4], Sevin Ayaz[5]

[1] *S.B. Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi Radyoloji Kliniği*
[2] *Mersin Kadın Doğum ve Çocuk Hastalıkları Hastanesi Radyoloji Bölümü*
[3] *S.B. Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi Üroloji Kliniği*
[4] *Gaziosmanpaşa Üniversitesi Tıp Fakültesi Üroloji Anabilim Dalı*
[5] *S.B. Mersin Devlet Hastanesi Nükleer Tıp Bölümü*

Our aim was to present a case of incidentally detected pelvic pancake kidney anomaly with imaging findings in a 65-years-old male patient and to discuss its clinical significance. Pancake kidney, also called pelvic fused kidney, lump or cake kidney, is a rare type of congenital renal fusion anomaly. It is characterized by the presence of a lobulated pelvic renal mass which has a dual parenchymatous system without an intervening septum. Radiologic and scintigraphic findings of the patient having symptoms of urgency were consistent with a pelvic pancake kidney. Although urinary system anomalies often coexist with malformations of other organs and systems, no associated anomalies could be detected in our case.

Keywords: ***Kidney,Radionuclide imaging, Tomography, X-Ray Computed, Urography.***

Altmışbeş yaşındaki erkek olguda insidental olarak saptanan pankek böbrek anomalisini görüntüleme bulguları ile sunmayı ve klinik önemini tartışmayı amaçladık. Pelvik füzyon anomalisi gösteren böbrek veya kek böbrek olarak da adlandırılan 'pankek böbrek' nadir görülen bir konjenital renal füzyon anomalisidir. Arada septum olmaksızın dual parankim sistemine sahip lobüle konturlu, pelvik yerleşimli renal kitle olarak karakterizedir. Ani idrar yapma isteği ve idrara sıkışma yakınmaları olan hastanın radyolojik ve sintigrafik bulguları pelvik pankek böbrek ile uyumlu bulundu. Üriner sistem anomalileri sıklıkla diğer organ ve sistem malformasyonlarıyla birliktelik göstermesine rağmen, olgumuzda eşlik eden başka anomali saptanamadı.

Anahtar Sözcükler: ***Böbrek, Radyonüklid görüntüleme, Tomografi, X-ışını bilgisayarlı, Ürografi.***

Pancake kidney is a rare type of congenital fusion anomaly of the kidney. It is characterized by the presence of a displaced, lobulated pelvic renal mass of dual parenchymatous system without an intervening septum. In this case report, we describe ultrasonography (US), excretory urography (EU), computed tomography (CT) and renal scintigraphy findings of an incidentally detected pancake kidney in a geriatric male patient.

Case Report

A 65 year-old male patient was referred to radiology department with symptoms of urinary urgency. The patient was informed about the procedures that would be performed and oral informed consent was obtained from the patient. His physical examination and laboratory tests were normal. US examination revealed that the kidneys were not located in their normal locations. In the pelvic region, an anteriorly located, lobulated mass, relevant with kidney was detected. EU revealed a renal pelvis and calyceal structures which were located on the left side of bony pelvis connecting to the urinary bladder with a short ureter. The calyceal structures on the right side were not observed, but the right ureter was seen located on the right side of bony pelvis (Figure 1). In contrast enhanced axial CT images, right and left kidneys could not be visualised in their normal locations. In the pelvic region, a single kidney with lobulated contours and two ureters were detected. (Figure 2 a, b). These findings were consistent with pelvic fused kidney (pancake kidney). Nuclear medicine studies were performed afterwards. In static renal scintigraphic examination with Tc-99m DMSA, irregular Tc-99m uptake was detected in a single mass of kid-

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İletişim

Uz.Dr.Alper DİLLİ
S.B. Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi
Radyoloji Kliniği
Tel : 0 312 326 00 10 / 1147
E-Posta Adresi : alperdilli@yahoo.com

ney which was located in pelvis. Some areas of the kidney demonstrated less activity uptake which correlated with loss of parenchyme function. (Figure 3). Dynamic renal scintigraphic examination with Tc-99m DTPA indicated normal perfusion, concentration and excretion pattern in the pelvic kidney. A reaccumulation pattern was detected after 10th minute which revealed the possibility of vesicoureteral reflux (Figure 4).

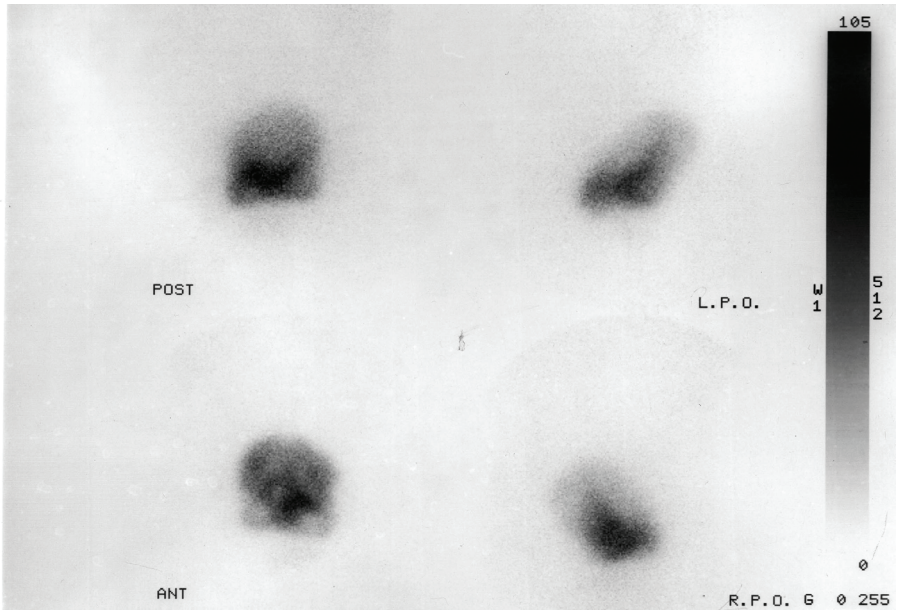

Figure 3: Tc-99m DMSA scintigraphy shows an irregular Tc-99m uptake in a single mass of kidney located in pelvis. In some areas of the kidney less activity uptake is seen, which indicates loss of parenchyme function.

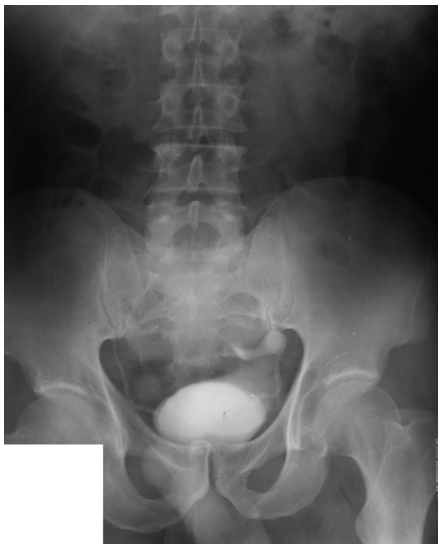

Figure 1: EU demonstrated a renal pelvis and calyceal structures located on the left side of bony pelvis which connects to the urinary bladder with a short ureter. Only the right ureter is seen on the right side of bony pelvis.

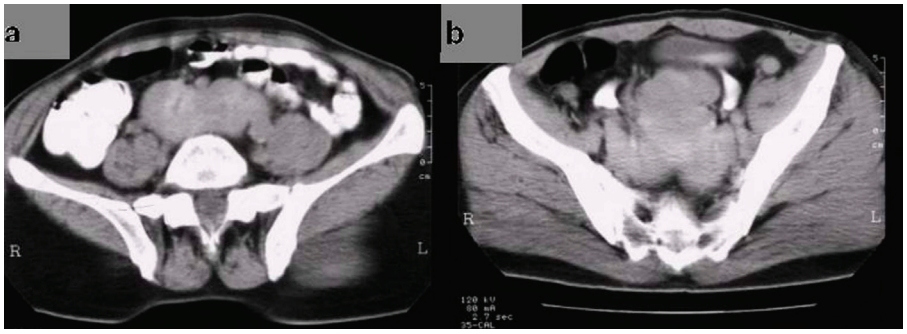

Figure 2 (a, b): Oral and IV contrast enhanced axial CT shows that the kidneys are not located in their normal positions (a). In the pelvic region a single mass of kidney with lobulated contours and two ureters are detected (b) .

Radiological examinations did not reveal any other anomalies related to other organs and systems.

Discussion

In autopsy cases renal ectopia is found in one of every 400 cases and 85% occur as fused kidney (1). The most common type of the renal ectopia is horseshoe kidney with an incidence of one in every 700 autopsies (2).

Congenital renal fusion anomalies can be categorized as horseshoe kidney or one of the subtypes of crossed ectopia with or without fusion (3). When a kidney is located on the side opposite from its ureteric insertion to the urinary bladder, the condition is called as a cross ectopia (4,5).

Looney and Dodd were the first to describe pelvic cake kidney (6). Its exact incidence is not defined in the literature and it is characterized by the presence of a lobulated renal mass located in pelvis which has two fused renal parenchymes without an intervening septum. Each fused kidney has its seperate collecting system. The ureters are short but drain to the urinary bladder in their normal positions.

In embryological life, two metanephric tissues occur in the pelvis which later

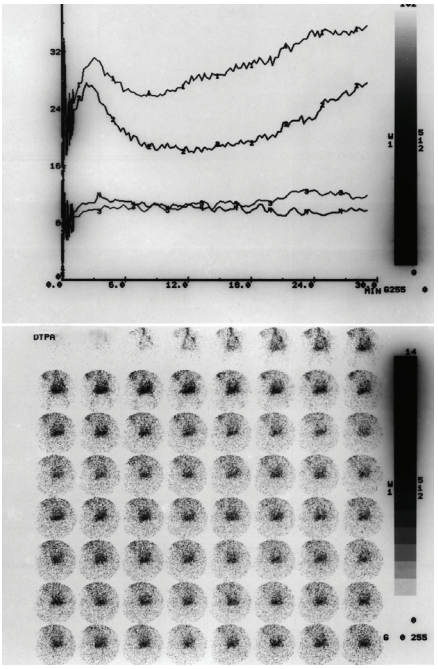

Figure 4: Tc-99m DTPA scintigraphy shows normal perfusion, concentration and excretion pattern in the pelvic kidney. A reaccumulation pattern was detected after 10th minute, revealing the possibility of vesicoureteral reflux.

show cranial ascent, axial deflection, medial rotation and lateral migration. The embryological basis for pancake kidney is fusion of each metanephric mass in the pelvis during early ascent. An abnormally located umbilical artery may force the metanephric masses into opposition and cause fusion (7). After fusion occurs, cranial ascent to the lomber position is impaired by the retroperitoneal structures. The vascular supply of the pancake kidney is consistent with its arrested ascent and derives from the common iliac artery or terminal aorta. Histologically, fused pelvic kidney shows cystic changes, immature glomeruli and dilated tubules.

The presence of a pancake kidney may predispose to recurrent urinary tract infections and stones. This is due to the probable rotation anomaly of the collecting system and short ureters which are prone to stasis and obstruction; but most of the reported cases are asymptomatic (8,9).

In the literature there have been cases of fused pelvic kidneys reported to have concomitant anomalies such as Fallot tetralogy (10), vaginal absence (11), sacral agenesis and caudal regression (12,13).

If a pancake kidney has to undergo surgery, division of the parenchyme presents potential problems such as renal vascular damage, postoperative renal failure and eventual renal failure (14). On the other hand, the isthmus connecting the inferior poles of horseshoe kidney can be safely divided to facilitate surgical conditions such as underlying aortic aneurysms (15).

In conclusion, US, EU and CT were efficient, not only in detection and evaluation of pancake kidney anomaly in our geriatric patient, but also in exclusion of concomitant anomalies as well. Nuclear medicine studies provided to evaluate the static and dynamic images of the kidney and helped to assess its functional status. The presence of pancake kidney does not necessarily mean that the patient will have progressive renal failure. But long term follow-up of renal function may help early detection of complications such as urinary tract infection, calculi and obstruction. The presence of concomitant anomalies should be investigated, as we did in our case. It is also clinically important to detect pelvic renal fusion anomalies and their accompanying anomalous vasculature before pelvic surgeries.

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