

Contribution of Tc99m-DMSA SPECT/CT to Planar Tc99m-DMSA Imaging: Intrathoracic Kidney: Case Report

Tc99m-DMSA SPECT/BT'nin Planar Tc99m-DMSA Görüntülemeye Katkısı: İntratorasik Böbrek

Kürşat OKUYUCU,^a
Hüseyin ŞAN,^a
Engin ALAGÖZ,^a
Kuthan KAVAKLI,^b
Özdeş EMER,^a
Alper Özgür KARAÇALIOĞLU^a

Departments of
^aNuclear Medicine,
^bThoracic Surgery,
GATA, Ankara

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Yazışma Adresi/Correspondence:

Kürşat OKUYUCU
GATA,
Department of Nuclear Medicine, Ankara,
TÜRKİYE/TURKEY
k.okuyucu@yahoo.com

ABSTRACT Intrathoracic kidney is a very rare congenital abnormality. It comprises less than 5% of all renal ectopias. Usually left kidney is more frequently affected than right kidney and is seen slightly more often in men than women. It is usually seen in infants and asymptomatic. But it may be seen in neonatal age and adults too. Many of the cases are diagnosed usually on chest X-ray graphy incidentally and do not necessitate any special treatment. If a Bochdalek hernia accompanies intrathoracic kidney and/or the patient is symptomatic, surgical intervention is required. Herein we present an intrathoracic kidney on Tc99m-DMSA SPECT/CT image in a young adolescent being evaluated for renal functions.

Key Words: Technetium Tc 99m dimercaptosuccinic acid; kidney; positron-emission tomography/computed tomography

ÖZET İntratorasik böbrek çok nadir görülen doğumsal bir anomalidir. Tüm renal ektopilerin yaklaşık %5 gibi bir oranını oluşturur. Genellikle sol böbrek sağ böbrekten daha fazla tutulum gösterir ve görülme sıklığı erkeklerde kadınlardan hafifçe fazladır. Çoğunlukla bebeklerde rastlanır ve semptom vermez. Fakat neonatal dönemde ve yetişkinlerde de görülebilmektedir. Vakaların çoğu genellikle başka bir sebeple araştırılan hastalarda çekilmiş direkt göğüs grafilerinde tesadüfen tespit edilir ve özel bir tedavi gerektirmez. Eşlik eden bir Bochdalek hernisi varsa ve/veya klinik belirti gösteriyorsa cerrahi girişim şarttır. Biz burada renal fonksiyonlar açısından araştırılan genç bir erişkinde Tc99m-DMSA SPECT/BT ile görüntülenmiş bir intratorasik böbrek vakasını sunuyoruz.

Anahtar Kelimeler: Teknesyum Tc 99m dimerkaptosüksinik asid; böbrek; pozitron-emisyon tomografi/bilgisayarlı tomografi

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Intrathoracic kidney is a very rare congenital abnormality with a prevalence of 1/10.000.^{1,2} It comprises less than 5% of all renal ectopias.³ Usually left kidney is more frequently affected than right kidney and male preponderance is slightly higher than female gender.^{1,4} It is mostly encountered in infants, but may be seen in neonatal age and adults too.⁵ Many of the cases are diagnosed usually on chest X-ray graphy incidentally as asymptomatic and do not necessitate any special treatment.^{4,5} A Bochdalek hernia oftenly accompanies intrathoracic kidney.⁵ If a Bochdalek hernia accompanies intrathoracic kidney and/or the patient is symptomatic, surgical intervention is required.⁵⁻⁷

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CASE REPORT

21 year-old male patient underwent routine Tc99m-DMSA planar imaging being investigated for renal parenchymal scarring and renal functions. It was noticed that left kidney was not in its normal anatomical site, malrotated, slightly smaller than normal and located superiorly around left thoracoabdominal region on planar images (Figure 1). Upon this, Tc99m-DMSA SPECT/CT was performed to determine the exact location of ectopic kidney. The left kidney was detected in left thorax pressuring inferior basal segment of the left lung (Figure 2).

DISCUSSION

Sometimes a thoracic kidney may be confused with a mass in thorax and the patient undergoes unnecessary investigations, serious surgical interventions and biopsies even.³ So it must be differentiated from real native space occupying mass lesions of this region to avoid these unwanted interventions. Chest X-ray shows intrathoracic kidney as a ho-

mogeneous opacity.^{3,8} Computed tomography (CT) demonstrates it within thorax and an IVP can confirm the certain diagnosis.^{3,8} Our case is consistent with literature for gender and side preponderance as it is in a male and left sided. It is diagnosed relatively at a later age according to literature, because it has been asymptomatic until now. Although a thoracic kidney is generally found on chest X-ray, we determined it on Tc99m-DMSA scintigraphy (Figure. 1). Planar images aroused suspicion about its location and led us to a SPECT imaging. CT component of Tc99m-DMSA SPECT/CT confirmed it in thorax definitely clearing the doubts about its site (Figure. 2).

If a kidney is not found in its normal anatomical location or probable ectopic sites mostly in pelvic region by functional imaging modalities like Tc99m-DTPA, Tc99m-DMSA or anatomical imaging modalities like ultrasonography, CT and there is not a history of nephrectomy, congenital aplasia, nonfunction after various reasons such as recurrent infection; you should to be alert and focus over that it may lodge in thorax asymptotically.

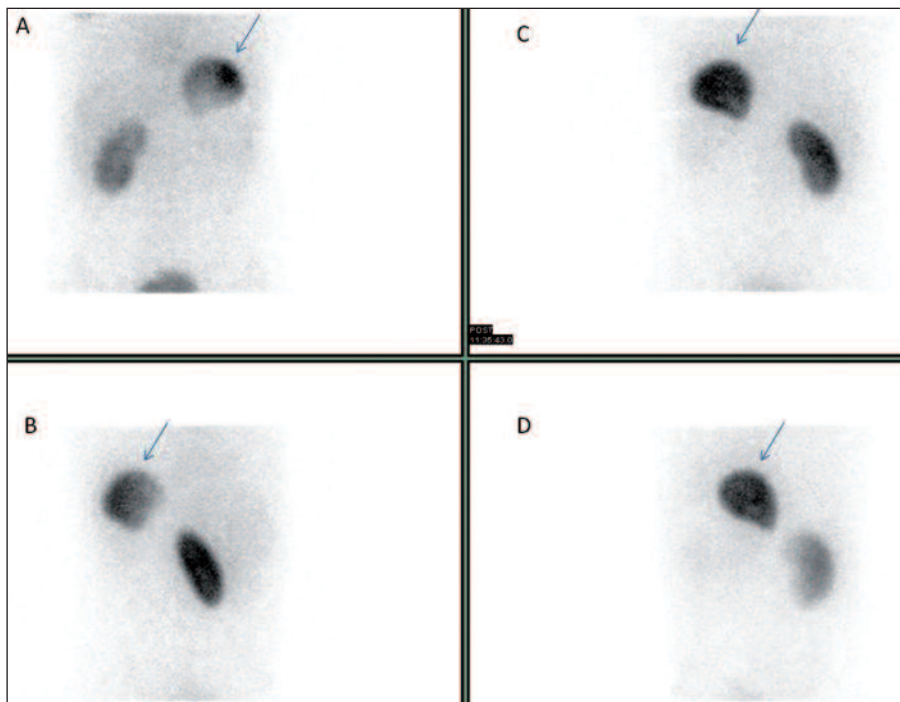


FIGURE 1: Planar Tc99m-DMSA scintigraphy (A:anterior, B:posterior right oblique, C:posterior, D:posterior left oblique views) depicts left kidney superiorly located around left thoracoabdominal region (arrow).

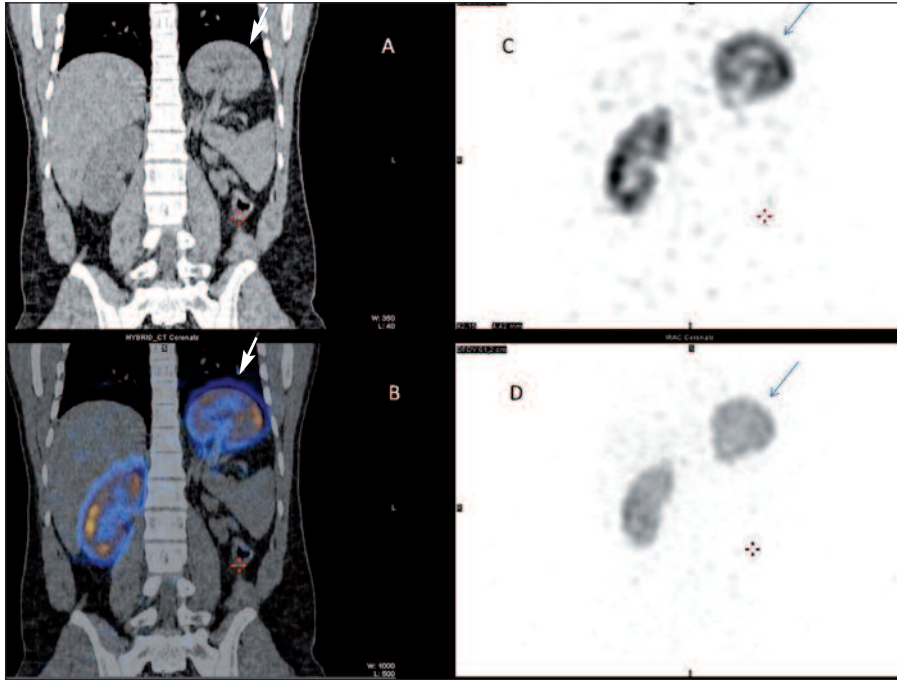


FIGURE 2: Coronal slices of Tc99m-DMSA SPECT/CT (A:CT, B:fusion, C:SPECT, D:SPECT-MIP images) localized left kidney exactly in left thorax (arrow).

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