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Beşevler 06500, Ankara - TÜRKİYE

Tel - Phone: 90 312 202 6850 - 312 223 7466

Faks - Fax: 90 312 212 4647

e-mail: duygu@gmjournet.net

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Tel - Phone: 90 312 232 30 88

e-mail: merdivenreklamtanitim@gmail.com

İÇİNDEKİLER

ARAŞTIRMALAR - ORIGINAL ARTICLES

- DIABETES MELLİTUS HASTALARINDA KORONER KAN AKIMI REZERVİNİN DEĞERLENDİRİLMESİNDE TC-99M SESTAMİBİ MİYOKART PERFÜZYON SİNTİGRAFİSİNİN NİCELİKSEL ANALİZİ
QUANTITATIVE ANALYSIS OF TC-99M SESTAMIBI MYOCARDIAL PERFUSION SCINTIGRAPHY IN THE EVALUATION OF CORONARY BLOOD FLOW RESERVE IN DIABETES MELLITUS PATIENTS
Ümit Özgür AKDEMİR, Tamer ATASEVER, İlhan YETKİN 153-156
- VİRAL HEPATİTLERDE MATRİKS METALLOPROTEİNAZLARIN VE İNHİBİTÖRLERİNİN EKSPRESYON PATERNLERİ VE BUNLARIN FİBROZİS İLE İLİŞKİLERİ
EXPRESSION PATTERNS OF MATRIX METALLOPROTEINASES AND THEIR INHIBITORS IN VIRAL HEPATITIS AND THEIR RELATION WITH FIBROSIS
F. Pınar Uyar GÖÇÜN, Banu BİLEZİKÇİ 157-162
- TORAKOTOMİ VAKALARINDA TORAKAL EPİDURAL ANALJEZİNİN POSTOPERATİF KOGNİTİF FONKSİYONLARA ETKİLERİ
THE EFFECTS OF THORACIC EPIDURAL ANALGESIA ON POSTOPERATIVE COGNITIVE FUNCTION AFTER THORACOTOMY SURGERY
Yusuf ÜNAL, Hande ARPACI, Deniz YORGANCILAR, Cüneyt KURUL, Sedat DEMİRCAN, Ömer KURTIPEK 163-167
- EFFECT OF ALCOHOL ON LIPID LEVELS IN THE BRAINS OF RATS
ALKOLÜN SIÇANLARDA BEYİN LİPİD SEVİYELERİNE ETKİSİ
Sevil KURBAN, İdris MEHMETOĞLU 168-171
- INVESTIGATION OF THE ULTRASTRUCTURE OF THE EPIDIDYMIS AFTER APPLICATION OF OESTROGEN-FREE AND OESTROGEN-RICH DIETS
ÖSTROJENDEN YOKSUN VE ZENGİN DİYET UYGULAMASINDA EPİDİDİMİS'İN İNCE YAPISININ İNCELENMESİ
Deniz ERDOĞAN, Murat TAS, Çiğdem ELMAS, Candan ÖZOĞUL, Kubilay VİCDAN 172-176
- EFFECTS OF TRANSIENT HYPOTENSION ON GLUTATHIONE LEVELS AND LIPID PEROXIDATION IN THE LIVER DURING PREGNANCY IN RATS
SIÇANLARDA GEBELİK SIRASINDA GEÇİRİLEN GEÇİCİ HİPOTANSİYONUN KARACİĞER LİPİT PEROKSİDASYONU VE GLUTATYON DÜZEYİNE ETKİSİ
Bilge PEHLİVANOĞLU, Sibel BAYRAK, Dicle Zeynep BALKANCI, Yasemin AKSOY 177-180
- THE EFFECTS ON PULMONARY ARTERY PRESSURE OF EARLY SURGICAL REPAIR OF VENTRICULAR SEPTAL DEFECT IN SMALL CHILDREN
KÜÇÜK ÇOCUKLARDA VENTRİKÜLER SEPTAL DEFEKTİN ERKEN CERRAHİ ONARIMININ PULMONER ARTER BASINCI ÜZERİNDEKİ ETKİLERİ
Velit HALİT, Erkan İRİZ, Gürsel Levent OKTAR, Rana OLGUNTÜRK, Serdar KULA, Sedef TUNAOĞLU, Veli Yıldırım İMREN, Dilek ERER 181-184
- OLGU SUNUMLARI - CASE REPORTS**
- PLEVRANIN SOLİTER FİBRÖZ TÜMÖRÜ; OLGU SUNUMU
SOLITARY FIBROUS TUMOR OF THE PLEURA; REPORT OF A CASE
Cemil Deniz YORGANCILAR, Özgür KARAKURT, İsmail Cüneyt KURUL, Sedat DEMİRCAN 185-187
- THE DIAGNOSIS OF ECTOPIC URETER IN A PATIENT WITH RENAL INSUFFICIENCY BY MAGNETIC RESONANCE UROGRAPHY
BÖBREK YETMEZLİĞİ OLAN BİR ÇOCUKTA MR ÜROGRAFI İLE EKTOPİK ÜRETER TANISI
Hasan Cem İRKİLATA, Yusuf KIBAR, Murat ZOR, Seref BASAL, Mehmet Mesut PISKIN, Murat DAYANÇ 188-189
- NONKARDİYOJENİK PULMONER ÖDEM: OLGU SUNUMU
NONCARDIOGENIC PULMONARY EDEMA: CASE REPORT
Gülşen Akay TAYFUN, Elif ÖZYAZICI, Serap KİRKİZ, Serdar KULA 190-192
- A PROBABLE CAUSE OF SEVERE HEPATOTOXICITY: CYTOSINE ARABINOSIDE
CİDDİ HEPATOTOKSİSİTENİN OLASI BİR NEDENİ: SİTOZİN ARABİNOSİD
Bilal ACAR, Zahit BOLAMAN, İrfan YAVASOĞLU, Gürhan KADIKÖYLÜ, Nil ÇULHACI 193-196
- A RARE ASSOCIATION: RECURRENT HYPERNATREMIA, CLEFT LIP/PALATE, AND HOLOPROSENCEPHALY
NADİR BİR BİRLİKTELİK: TEKRARLAYAN HİPERNATREMİ, YARIK DAMAK-DUDAK VE HOLOPROSENSEFALİ
Ebru ARHAN, Derya SOY, Özlem ARMAN, Gülşen KÖSE 197-199

THE DIAGNOSIS OF ECTOPIC URETER IN A PATIENT WITH RENAL INSUFFICIENCY BY MAGNETIC RESONANCE UROGRAPHY

Hasan Cem İRKILATA, Yusuf KIBAR, Murat ZOR, Seref BASAL, Mehmet Mesut PISKIN, Murat DAYANÇ

ABSTRACT

We report an ectopic ureter associated with right solitary kidney and renal insufficiency. Since the serum creatinine level of the patient was high, intravenous urography could not be performed. The diagnosis of ureteral ectopia was only achieved by magnetic resonance urography.

Key Words: Ectopic Ureter, MR Urography, Renal Insufficiency.

BÖBREK YETMEZLİĞİ OLAN BİR ÇOCUKTA MR ÜROGRAFI İLE EKTOPIK ÜRETER TANISI

ÖZ

Sağ soliter böbrek ve böbrek yetmezliği ile ilişkili ektopik üreter olgusunu sunduk. Hastanın serum kreatinin seviyesi yüksek olduğundan, çocuğa intravenöz pyelografi uygulanamadı. Üreteral ektopi tanısının konulması sadece Manyetik Rezonans Ürografi ile başarıldı.

Anahtar Kelimeler: Ektopik Üreter, MR Ürografi, Renal Yetmezlik.

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INTRODUCTION

The term “ectopic ureter” describes a ureter that inserts distal to its normal location or reproductive tract. If the ureter terminates at a level proximal to the continence mechanism or at the reproductive tract, ectopic ureter is associated with ureterohydronephrosis and renal tissue is often poor or nonfunctional. Thus, the diagnosis of ectopic ureter in these cases may be very difficult or impossible with conventional radiographic imaging. Developed magnetic resonance imaging (MRI), called magnetic resonance urography (MRU), permits the assessment of both the functioning and morphology of the urinary tract (UT)¹. It has two sequences: T2-weighted sequence of MRU can be satisfactory especially in the evaluation of the highly dilated UT, and T1-weighted sequence of MRU (excretory MRU) enables dynamic evaluation of the UT by the injection of intravenous paramagnetic contrast material (gadolinium-DTPA) and can be applied in patients with renal insufficiency at the initial stage.² We report a child with ectopic ureter associated with renal insufficiency diagnosed only by MRU.

CASE REPORT

A 2-year-old boy presented with urinary infection. He also had an anorectal malformation. Absence of the left kidney and right ureterohydronephrosis were observed on ultrasonography (US). No vesicoureteral reflux was present on voiding cystourethrography. Serum creatinine level was 1.9 mg/dl and so intravenous urography (IVU) could not be performed. Three-dimensional gradient echo T1-weighted sequence MRU was performed by the injection of 0.2 mmol/kg gadolinium-DTPA intravenously and T1-weighted sequence images were acquired for 20 minutes. MRU completely demonstrated the right UT and revealed the right ureter inserted in the right seminal vesicle (Figure 1). The urinary infection was treated with parenteral antibiotherapy and nephrostomy was urgently performed. After the initial treatment, the serum creatinine level did not decrease. The diagnosis of ectopic ureter was confirmed with antegrade pyelography (Figure-2). Finally, ureteroneocystostomy was performed. Dilatation of the right kidney disappeared and the serum creatinine level decreased to 1.3 mg/dl during the follow up.

DISCUSSION

Ectopic ureter appears in different clinical scenarios based on the termination site. It may be bilateral or unilateral and associated with ureteral duplication or ureterohydronephrosis. Approximately 85% of ectopic ureters drain the upper pole moiety of a duplex kidney in females and ectopic ureters are more commonly associated with a dilated single system in males.³⁻⁵ US can rarely determine the termination site of ectopic ureter.⁶ Another conventional imaging method, IVU, is able to visualize the ectopic ureter that has sufficient renal functioning in some cases. Nevertheless,

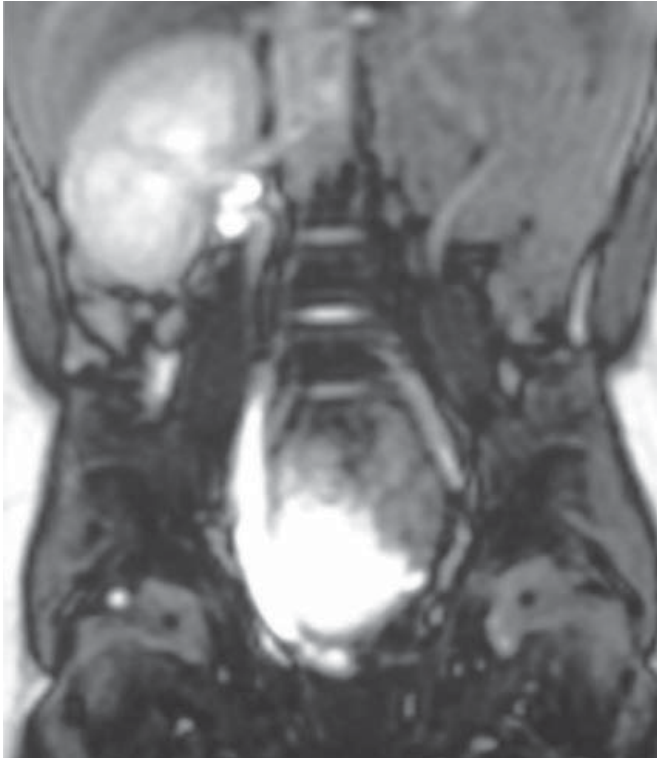


Figure 1: MRU completely demonstrated right urinary tract and revealed ureter that inserted in right seminal vesicle.

the moiety of kidney where the ectopic ureter drains is generally dysplastic or ureterohydronephrotic or both.⁷ As renal functions are decreased in these patients, IVU is insufficient for imaging. MRU has become an accepted method for evaluating the dilated and complicated urinary system anomaly. Depicting anatomy with higher contrast, three-dimensional and spatial resolution in any orthogonal plane is the most important advantage of MRU.¹ In addition, MRU is considered a valuable method in the diagnosis of ectopic ureters draining dysplastic or poor functioning renal moiety.⁷ MRU delineates the renal moiety independent from functioning renal tissue and visualizes the caliber, course, and termination sites of the ectopic ureter. The unique diagnostic technique is MRU in patients with renal insufficiency at the initial stage (creatinine level lower than 3 mg/dl).⁸ In our case, conventional imaging techniques were completely useless since the patient had renal failure and ectopic ureteral insertion was visualized only by MRU. In conclusion, MRU is a valuable and accurate modality for the diagnosis of ectopic ureters draining dysplastic or poor functioning renal moiety and is the unique choice of imaging in patients with renal insufficiency.

Correspondence Address
Murat ZOR
GATA, Üroloji AD, Ankara, Türkiye
Tel: 3123045610
murat804@yahoo.com

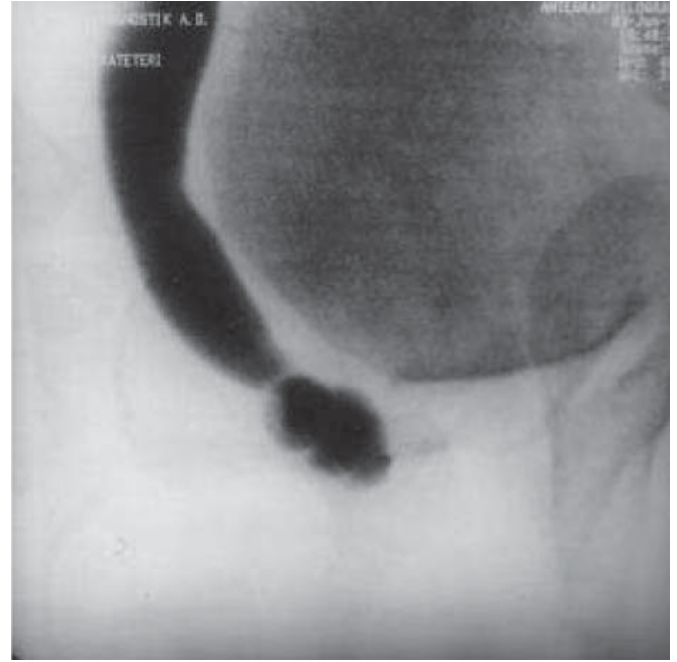


Figure 2: Antegrade pyelography confirmed the diagnosis of ectopic ureter and site of its termination.

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