



ORIGINAL RESEARCH PAPER

Radio-Diagnosis

A RARE CASE REPORT OF RENAL AGENESIS WITH COMPLETELY DEVELOPED URETERIC BUD

KEY WORDS: Unilateral renal agenesis, agenesis, blind ending ureteric bud, remnant ureteric bud.

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ABSTRACT

Unilateral renal agenesis is a very rare condition with a reported incidence of 0.93-1.8 per 1000 autopsies and is very less common than bilateral renal agenesis. We are reporting a case of a 38 years old male patient who presented with epigastric pain and burning micturition since 10 days. Radiological imaging showed absent left kidney with blind ending remnant of completely developed ureteric bud noted incidentally.

Case Summary:

A 38 year old male patient presented to us with complaints of epigastric pain and burning micturition since 10 days. On per abdominal examination, abdomen was soft and non tender, no guarding or rigidity was noted, bowel sounds were normal. Patient had no known Co-morbidities. Past history and family history were not significant. Patient's serum creatinine was within normal limits.

Imaging Findings:

Transabdominal ultrasonography has revealed empty left renal fossa, right kidney was normal in size with normal echotexture.

A fairly large, hypo echoic cystic lesion was noted in the left lower quadrant of abdomen at the base of the urinary bladder which was opening into the bladder at its distal end (Figure 1) with completely developed proximal tubular structure which is the ureteric bud which has completely -developed showing blind ending on its proximal end into the left renal fossa. Right kidney showed compensatory enlargement (Figure 2). Rest of the abdomen scan showed no significant finding Renal agenesis/ Ectopic kidney was suspected and for better characterisation MRI abdomen was done.

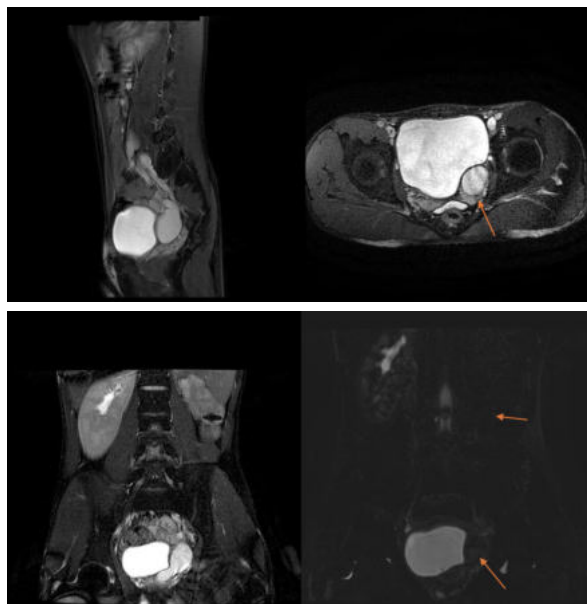


Figure 1: Transabdominal ultrasonography reveals hypoechoic lesion at the base of the bladder



Figure 2: Transabdominal sonography reveals compensatory hypertrophy of right kidney

MRI Abdomen was performed on 1.5 Tesla GE MRI system which has revealed absent left kidney with empty renal fossa, right kidney was enlarged in size with normal signal intensity, T1 hypo intense, T2 hyper intense oval shaped lesion was noted at the base of the bladder with a blind, tubular shaped proximal end and distal end opening into urinary bladder at left vesicoureteric junction. Imaging findings were indicative of unilateral renal agenesis with completely developed blind ending ureteric bud



DISCUSSION:

The completely developed ureteric bud remnant with renal agenesis is a very rare congenital disease that has been officially reported in four to five case reports and where our case will be the sixth case. It is usually noted as an incidental finding. It can be detected on antenatal ultrasonography where unilateral renal agenesis is usually associated with oligohydramnios which makes it difficult to diagnose antenatally. Ultrasonography and Computed Tomography have been reported to be of limited use in its detection. MRI is considered as superior modality for its diagnosis.

Our male patient suffered from epigastric pain which is usually not associated with renal agenesis. Previous studies have reported that the incidence of ipsilateral renal agenesis was only 0.004%

During the embryonal development of urogenital system, due

to faulty inductive interaction between the ureteric bud and the metanephrogenic mesenchyme, there could be unilateral (0.1%) or bilateral (1 in 3000-4000) agenesis of kidney tissue.

The pathophysiology of this rare case is not well known in literature, there is a significant familial association (offspring's of patients with unilateral renal agenesis have 12% chances of developing urogenital anomalies) In few other incidents, it is associated with mutations of RET (Rearranged in Transfection) gene.

The c-RET gene encodes a receptor tyrosine kinase that is expressed in the wolffian duct and ureteric bud of the developing excretory system. Animal studies in mice for a mutation in c-RET gene displayed renal agenesis suggesting a critical role for this gene in metanephric kidney development.

Unilateral renal agenesis is usually associated with Mullerian duct anomalies, MRUCS, congenital heart diseases, VACTERL association, seminal vesicle cyst and Zinner syndrome.

Most patients with unilateral agenesis lead a normal lives although there is an increased risk of renal infections, nephrolithiasis, hypertension and renal failure.

CONCLUSION:

Unilateral renal agenesis with a completely developed remnant of ureteric bud is a very rare congenital anomaly. MRI is the modality of choice for diagnosis. Patients are usually asymptomatic and it presents as an incidental finding. As patients are usually asymptomatic, no specific treatment is required and they should be put on regular follow-up for developing any associated complications.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the article. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest :

There are no conflicts of interest.

Author's Contributions

PVS ABHISHEK case identification, interpretation of the data, supervised, critically reviewed and critically revised the paper; POKAM HARIKIRAN, BUJJI NIKITHA reviewed literature, compiled the data and preparation of the manuscript.

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Nil

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REPORT

CONSENT FORM

Patient's name: AJAY.K

Address: Maruthinagar, Mandamari, Manchiryal (District), Telangana, India

I.P. No. 12665252

The details of the study have been provided to me in writing and explained to me in my own language. I confirm that I have understood the above study and had the opportunity to ask questions. I understand that my participation in the study is voluntary and that I am free to withdraw at any time, without giving any reason, without the medical care that will normally be provided by the hospital being affected. I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s). I fully consent to participate in the above study.

Signature of the Patient: [Signature] Date: 13/08/2022

Signature of the witness: [Signature] Date: 13/08/2022