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Unilateral renal agenesis associated with ovarian cysts in a 19 year old woman in Orlu, South-East Nigeria

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ABSTRACT

Background: Anomalies linked with unilateral renal agenesis are not completely known. **Aim:** We report here a rare occurrence of ovarian cysts associated with unilateral renal agenesis in Orlu, Nigeria. **Methods:** A 19 year-old woman was being evaluated for acute pyelonephritis. **Findings:** We noted that this patient had acute pyelonephritis on a background of right renal agenesis that was associated with bilateral ovarian cysts. Ovarian cyst in the index patient was an incidental finding whereas acute pyelonephritis, perhaps, was a complication of unilateral renal agenesis. **Conclusion:** This case report highlights the need for consideration of possibility of ovarian cysts during evaluation of unilateral renal agenesis as many abnormalities of the ovaries, uterus and vagina are associated with renal agenesis and may impact negatively on fertility.

Key words: Unilateral renal agenesis, ovarian cysts, pyelonephritis, urogenital abnormalities, Orlu, Nigeria

INTRODUCTION

Unilateral renal agenesis occurs in about 0.93 - 1.8 per 1000 autopsies.[1] The diagnosis is usually incidental, during imaging evaluation of patients. Associated gonadal and genital abnormalities occur in females as well as in males.[2] In females, such abnormalities include ovarian agenesis, ovarian cysts, duplicate, unicornuate, bicornuate or rudimentary uterus, absent or double vagina, absent fallopian tube, abnormal external genitalia and others.[3]

Renal agenesis associated with cryptorchidism has been reported in Nigeria.[4] From literature search, no case report from Nigeria has linked unilateral renal agenesis with ovarian cysts or any other abnormalities of the ovary.

CASE PRESENTATION

A 19 year-old woman was referred to us on account of frequent urination, dysuria, bilateral leg and facial swelling, all of 2 weeks duration. The swelling was worse in the morning but waned as the day progressed. She had

intermittent fever associated with chills and rigor. There was associated left flank, dull, non-colicky pain. There was urinary frequency, but no urgency, dribbling of urine, hesitancy, or dysuria. She had no hematuria. There was no high risk behavior for sexually transmitted disease. She was not a known hypertensive or diabetic patient. She had not had any leg or facial swelling in the past. She had no history of trauma to the abdomen and had no previous abdominal surgery. Her genotype was AA.
She attained menarche at 13 years and her menstrual history had been unremarkable. For the above symptoms she was seen in a peripheral hospital where some antimalarial drugs and antibiotics were given. As her problems did not abate, patient demanded for referral to our center. There was no family history of renal disease. She was an undergraduate.

Physical examination revealed a young woman that was not in obvious respiratory or painful distress, afebrile, not pale, anicteric, but had bilateral pitting leg oedema up to the knee. Asterixis was absent. Her pulse was 76 per minute and blood pressure was 110/70mmHg while sitting. Apex beat was at the 5th left intercostal space at the mid-clavicular line. First and second heart sounds were heard and normal. She had no murmur and no crepitation. Abdomen was full and moved with respiration. There was no liver or splenic enlargement. The left kidney was not ballotably enlarged, while the right was not palpable. Left renal angle tenderness was noted. Central nervous system examination was unremarkable. Breath sound was vesicular and chest was clinically clear. Musculoskeletal system examination was unremarkable.

Impression of acute pyelonephritis was made.

Investigations were requested and specimens collected. They included urinalysis, urine microscopy/culture and sensitivity, full blood count (FBC), serum electrolytes, urea and creatinine (SEUC), fasting blood sugar (FBS), abdominal ultrasound scan. However, she also had abdomino-pelvic computerized tomogram (CT) when it was observed that the ultrasound scan reported absent right kidney.

She was commenced on empirical antibiotic therapy.

The results of the laboratory investigations are shown in table 1.

Diagnosis of acute pyelonephritis on a background of right renal agenesis with multiple ovarian cysts was made. She was continued on definitive antibiotic therapy, educated on her health condition and placed on yearly surveillance.

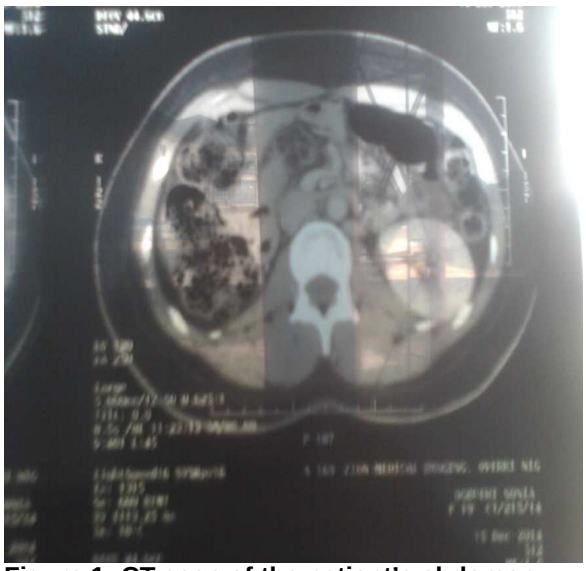

Figure 1: CT scan of the patient's abdomen

Axial contrast enhanced CT of abdomen showing absent R kidney, compensatory L kidney enlargement

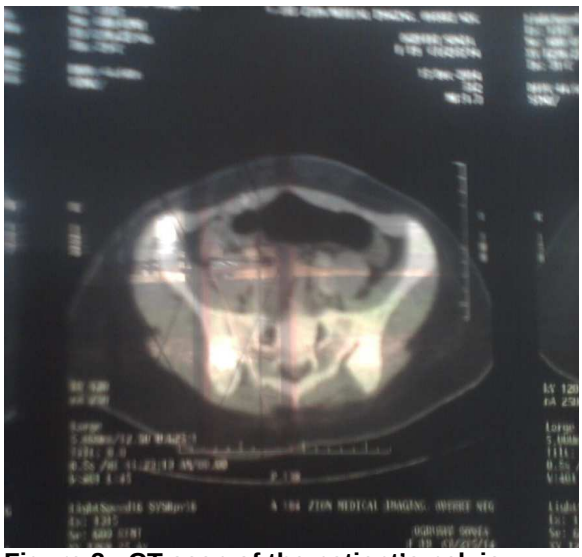

Figure 2: CT scan of the patient's pelvis

Table 1: Investigation results

INVESTIGATIONS	RESULTS
Urinalysis	
Color	Amber
Specific gravity	1.020
pH	6.0
Protein	+
Leucocytes	+
Blood	-
Nitrite	+
Ascorbic acid	+
Full blood count	
Hb	11.2g/dl,
Wbc	Total 13,200cells/ml, neutrophils 70%, lymphocytes 30%
Platelets count	230000 x 10^3/ml
ESR	45mm/1^{st} hour
SEUC	
Sodium	138mmol/l
Potassium	4.1mmol/l
Chloride	104mmol/l
Bicarbonate	24mmol/l
Urea	8mmol/l
Creatinine	110µmol/l
Fasting blood sugar	5.2mmol/l
Fasting serum lipid profile	Total cholesterol 4.2mmol/l, LDL-C 2.4mmol/l, HDL-C 1.7mmol/l, Triglyceride 1.6mmol/l
CT scan abdominopelvic	Right kidney not seen. Left kidney is enlarged (compensatory) measuring 130mm x 77mm with normal enhancement. No hydronephrosis, no hydroureter, no calculi were noted. Both ovaries show multiple cysts of variable sizes right ovary measures 46mm x 32mm, left ovary 35mm x 25mm. no calcifications were seen. Prominent pelvic vessels are noted.

SEUC: Serum electrolytes, urea, and creatinine

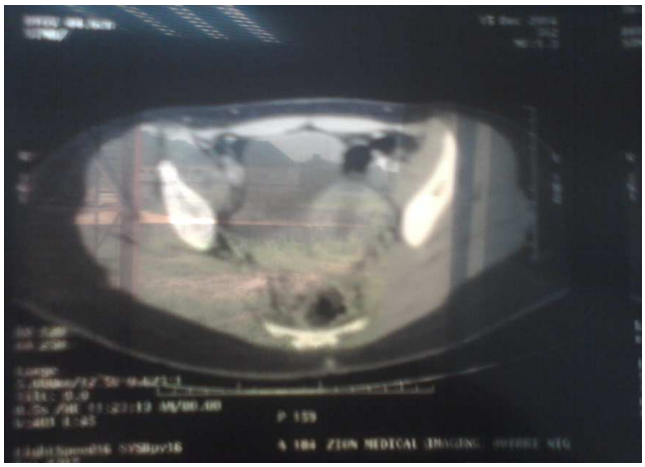

Figure 3: Axial CT scan of patient's pelvis showing multiple cysts of varying sizes in the ovaries

DISCUSSUON

Alterations in the development of the intermediary mesoderm from which the urogenital systems originate before the fourth and tenth week of gestation can lead to unilateral agenesis of the urogenital structures.[1] Failure of induction of metanephric blastemal by the ureteric bud, ureteric bud developmental error, malformation of the mesonephric duct with consequent blind ending ureter are presumed to result in renal agenesis.[5] In addition, failure of the bud to form hemitrigone and multicystic renal dysplasia in-utero may also cause renal agenesis.[5]

Usually, unilateral agenesis is asymptomatic and may be discovered incidentally in the course of routine examination. It may present with abdominal pain or with clinical features of renal impairment.[6] In this case report, renal agenesis was found while evaluating patient for left flank pain and peripheral edema of renal origin. However, the cause of the oedema and flank pain was acute pyelonephritis. Although renal agenesis in about 50% of cases has associated abnormalities of the urogenital system which include vesico-ureteral reflux (28%), ureterovesical junction obstruction (11%), ureteropelvic junction obstruction (7%) and coexisting ureterovesical and ureteropelvic junction obstructions (2%),[7] our index patient did not have any of these abnormalities. Ipsilateral genital abnormalities have been reported in about 50% of renal agenesis, more in males.[2] Vaginal duplication, atresia, bicornuate uterus are the most common abnormalities found in females with renal agenesis.[3] Ovarian cysts have also been reported in some studies.[8,9,10] From literature search, we did not find any Nigerian case report associating unilateral renal agenesis with ovarian cysts. However, we found only bilateral multiple ovarian cysts in our patient in this case report. We did not do a hysterosalpingogram and therefore, could not assert the absence of uterine abnormality even though the history of regular normal menstrual cycles had ruled out vaginal atresia in this patient.

It is pertinent that any patient found to have a solitary kidney should also be considered and evaluated for possible co-existing abnormalities. Such evaluation should include screening micturating cystourethrography and hysterosalpingography in females, as early recognition and treatment of these co-existing anomalies is imperative to reduce the long term risk of renal damage and infertility in affected patients.[6]

Patient with unilateral renal agenesis and a normal solitary kidney are at increased risk of proteinuria, hypertension and renal insufficiency.[6] Therefore it is essential to have prolonged and careful follow up and to employ strategies at maximizing renal preservation.[6] Since sonography is a non-invasive modality, it is an ideal tool for long term follow up for assessing the status of the solitary kidney.

CONCLUSION

This case report showed right renal agenesis associated with bilateral multiple ovarian cysts. It highlights the need for proper evaluation for possible associated uro-genital and gonadal abnormalities whenever a solitary kidney is found in a patient.

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Conflict of Interest: None declared