



Management of Horse-Shoe Kidney with Hydronephrosis: A Rare Case Report

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ABSTRACT

A horseshoe-shaped kidney, also known as a renal fusion, results from the joining or fusing of two kidneys. However, the abnormality with the kidneys extends beyond simply their form and shape; it also includes where they are located. A horseshoe kidney is often located far deeper in the pelvis, rather than in the upper abdomen, beneath the rib cage, and close to the spine. Introducing a case of an 11 years old female child came to Emergency Department with the complaints of acute severe abdominal pain radiating to back, painful urination and fever since 2 days. She was treated with Inj. Neomol 150 mg/100 ml, Tab. Phexin DT 250 mg BD, Tab O2 (Ornidazole and Ofloxacin) BD. After undergoing Ultrasonography and Intravenous Pyelography, patient was diagnosed as a case of Horse-shoe shaped kidney with right hydronephrosis. Horse-shoe kidney is the most prevalent renal fusion defect, however the ailment is extremely rare, and there aren't many publications or studies accessible about how to treat it or its complications. Given its rarity, the illness is best managed using an interdisciplinary strategy with the aid of qualified doctors, radiologists, and urology nurses.

Keywords: horseshoe kidney, renal fusion, hydronephrosis, hydroureter, intravenous pyelography

Introduction

A horseshoe-shaped kidney, also known as a renal fusion, results from the joining or fusing of two kidneys.[1] However, the abnormality with the kidneys extends beyond simply their form and shape; it also includes where they are located. A horseshoe kidney is often located far deeper in the pelvis, rather than in the upper abdomen, beneath the rib cage, and close to the spine.[2] The nephrogenic blastema merges during the fourth week of foetal development, resulting in the horseshoe structure. Early-life symptoms that lead to a diagnosis usually involve a urinary tract infection.[3] This condition may aggravate nephrolithiasis, recurrent urinary tract infections, upper gastrointestinal tract dyspeptic syndrome, stomach pain, and nauseous incontinence. Horseshoe kidney can result in side effects such renal blockage, recurring inflammatory disorders, and malignant diseases. [4] An blockage to urine flow downstream causes hydrostatic dilatation of the renal pelvis and calyces, which is referred to as hydronephrosis. In contrast, hydroureter defines the enlargement of the ureter, while hydro-nephro-ureter explains the enlargement of the complete upper urinary tract (including the ureter as well as the renal pelvicalyceal system). [5] Patients with horse shoe kidneys have a higher incidence of hydronephrosis (64%) than those with kidneys with a normal structural makeup (7 percent). [6]

Patient and observation

Patient Information: An 11 years old female child came to Emergency Department with the complaints of acute severe abdominal pain radiating to back, painful urination and fever since 2 days. Patient has a recurrent history of similar episodes of severe abdominal pain and fever since 5 years of age. She was administered antibiotics and anti-pyretics and the symptoms were resolved. Patient's mother is a known case of psychiatric illness and on anti-psychotic medications since before the birth of the patient.

Clinical Findings : On physical examination, the patient was conscious and oriented, body built was thin, Posture erect, per abdomen was non-tender. Vital signs: Temperature-100.4 degrees Celsius, Pulse 88 beats per minute, Respiration – 22 breaths per minute, Blood Pressure – 130/80 millimetre of Hg.

Timeline of current episode: She had severe abdominal pain, painful urination and mild fever since 2 days.

Diagnostic assessment: Ultrasonography and Intravenous Pyelography revealed Horse-shoe kidney with right hydronephrosis with hydroureter. Complete Blood Count showed decreased Hemoglobin (9.6 gm%) and raised White Blood cell count (13000 /cu mm).

Diagnosis: Imaging tests and blood investigations revealed that the patient had horse shoe kidney with hydronephrosis.

Therapeutic interventions: Pharmacological interventions included: Following medications were administered: Inj. Neomol 150 mg/100 ml, Tab. Phexin DT 250 mg BD, Tab O2 (Ornidazole and Ofloxacin) BD

Informed Consent: Parents of the patient gave signed, well-informed consent for the publication of this case report.

Discussion

In the presented case, patient had right hydronephrosis with horse-shoe kidney with the lower pole of both the kidneys fused to each other by a hypochoic band of thickness 4.2 cm along with renal pelvis rotated superiorly.

The elevated insertion of the ureter into the renal pelvis, the irregular ureteral course anterior to the isthmus, and the aberrant blood supply to the kidney all contribute to the increased frequency of hydronephrosis in a horseshoe kidney.[7] As such no specific surgical management for horse-shoe kidney exists but management of hydronephrosis in patients with horseshoe kidney can include Laparoscopic pyeloplasty in case of obstruction of pyelo-ureteral segment. [8]

Patients with Horse shoe kidney are usually asymptomatic and are accidentally diagnosed during investigations and scans for unrelated condition. The most frequent complication of Horse shoe kidney is hydronephrosis which manifests as acute severe abdominal pain, painful micturition and fever. The confirmative diagnostic evaluation for this condition is Ultrasonogram and Intra-venous pyelography.

Conclusion

Nephrolithiasis, vesicoureteral reflux, urinary tract infections, transitional cell malignancies, and malignant renal tumours are all more common in people with horseshoe kidneys. Horse-shoe kidney is the most prevalent renal fusion defect, however the ailment is extremely rare, and there aren't many publications or studies accessible about how to treat it or its complications. Given its rarity, the illness is best managed using an interdisciplinary strategy with the aid of qualified doctors, radiologists, and urology nurses.

Patient Perspective

The patient shared that on admission she was in immense abdominal pain and discomfort that was intolerable. 2 days after administration of the medications, her pain level was reduced and other symptoms were also resolved due to which she started to feel better and healthy.

Competing interests

There are no conflicting interests identified by the authors.


Authors' contributions

The final paper has been reviewed and approved by all writers.

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Care Checklist



CARE Checklist of information to include when writing a case report

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| Topic | Item | Checklist item description | Reported on Line |
|-----------------------------|------|--|---|
| Title | 1 | The diagnosis or intervention of primary focus followed by the words "case report" | <input checked="" type="checkbox"/> |
| Key Words | 2 | 2 to 5 key words that identify diagnoses or interventions in this case report, including "case report" ... | <input checked="" type="checkbox"/> |
| Abstract (no references) | 3a | Introduction: What is unique about this case and what does it add to the scientific literature? | <input checked="" type="checkbox"/> |
| | 3b | Main symptoms and/or important clinical findings | <input checked="" type="checkbox"/> |
| | 3c | The main diagnoses, therapeutic interventions, and outcomes | <input checked="" type="checkbox"/> |
| | 3d | Conclusion—What is the main "take-away" lesson(s) from this case? | <input type="checkbox"/> |
| Introduction | 4 | One or two paragraphs summarizing why this case is unique (may include references) | <input checked="" type="checkbox"/> |
| Patient Information | 5a | De-identified patient specific information. | <input checked="" type="checkbox"/> |
| | 5b | Primary concerns and symptoms of the patient. | <input checked="" type="checkbox"/> |
| | 5c | Medical, family, and psycho-social history including relevant genetic information | <input checked="" type="checkbox"/> |
| | 5d | Relevant past interventions with outcomes | <input checked="" type="checkbox"/> |
| | 6 | Describe significant physical examination (PE) and important clinical findings. | <input checked="" type="checkbox"/> |
| Timeline | 7 | Historical and current information from this episode of care organized as a timeline | <input checked="" type="checkbox"/> |
| Diagnostic Assessment | 8a | Diagnostic testing (such as PE, laboratory testing, imaging, surveys). | <input checked="" type="checkbox"/> |
| | 8b | Diagnostic challenges (such as access to testing, financial, or cultural) | <input type="checkbox"/> |
| | 8c | Diagnosis (including other diagnoses considered) | <input type="checkbox"/> |
| | 8d | Prognosis (such as staging in oncology) where applicable | <input type="checkbox"/> |
| Therapeutic Intervention | 9a | Types of therapeutic intervention (such as pharmacologic, surgical, preventive, self-care) | <input checked="" type="checkbox"/> |
| | 9b | Administration of therapeutic intervention (such as dosage, strength, duration) | <input checked="" type="checkbox"/> |
| | 9c | Changes in therapeutic intervention (with rationale) | <input type="checkbox"/> |
| Follow-up and Outcomes | 10a | Clinician and patient-assessed outcomes (if available) | <input type="checkbox"/> |
| | 10b | Important follow-up diagnostic and other test results | <input type="checkbox"/> |
| | 10c | Intervention adherence and tolerability (How was this assessed?) | <input type="checkbox"/> |
| | 10d | Adverse and unanticipated events | <input type="checkbox"/> |
| Discussion | 11a | A scientific discussion of the strengths AND limitations associated with this case report. | <input checked="" type="checkbox"/> |
| | 11b | Discussion of the relevant medical literature with references. | <input checked="" type="checkbox"/> |
| | 11c | The scientific rationale for any conclusions (including assessment of possible causes) | <input type="checkbox"/> |
| | 11d | The primary "take-away" lessons of this case report (without references) in a one paragraph conclusion | <input checked="" type="checkbox"/> |
| Patient Perspective | 12 | The patient should share their perspective in one to two paragraphs on the treatment(s) they received | <input checked="" type="checkbox"/> |
| Informed Consent | 13 | Did the patient give informed consent? Please provide if requested | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |