Case Report

MALROTATION OF GUT WITH HORSE SHOE KIDNEY

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ABSTRACT
We report case of ma I rotation of gut with horse shoes kidney. Plain abdominal x-ray reveals no pneumo-peritoneum, abnormal calcification, and abnormal gut loop seen. Whereas on barium study, small gut situated in right side of abdomen with ileo-cecal junction located in Left iliac fossa.
Complementary gray scale ultrasound done, no gut mass/dilatation, vicero-megaly appreciated however shows horse shoe kidney. CT shows also horse shoe kidney.

Abreviations: CT-computed topography

Keywords: Malrotation of gut, volvulus, intestinal obstruction, horse shoe kidney

CASE REPORT

A female patient Kalsoom 32 year old, married, came to OPD presented with vague abdominal discomfort and off and on vomiting for last 2-3 years. No history of diarrhea, malena, constipation, HTN and diabetes. On GPE patient was pale but systemic examination was unremarkable. Routine investigation reveals *Hb—7* ml/dl.
Plain abdominal x-ray shows no pneumo-peritoneum, no abnormal calcification, and no abnormal gut loop seen. Whereas, on barium study, small gut situated in right side of abdomen with ileo-cecal junction located in left iliac fossa.
Complementary gray scale ultrasound done, no gut mass/dilatation, vicero-megaly appreciated however reveals horse shoe kidney. CT shows horse shoe kidney.

DISCUSSION

Many authors define intestinal malrotation as intestinal non rotation or incomplete rotation around the superior mesenteric artery (SMA). It involves anomalies of intestinal fixation as well. Interruption of typical intestinal rotation and fixation during fetal development can occur at a wide range of locations; Non-rotation is misnomer, since it describes a condition resulting from a 270° anticlock wise rotation in this condition. The entire small bowel comes to lie on the right and the colon on the left of the abdomen. Reversed rotation is a 90° clock wise rotation which brings the traverse colon behind duodenum.(1)
This leads to various acute and chronic presentations of disease. The most common type found in pediatric patients is incomplete rotation predisposing to midgut volvulus, which can result in short-bowel syndrome or even death.
Malrotation was reported prior to the 1900s. During the 20th century, understanding of the embryology and anatomy of malrotation became more complete, along with changes in surgical approaches to the problems. In 1936, William E. Ladd wrote the classic article on treatment of malrotation, and his surgical approach (i.e., Ladd procedure) remains the cornerstone of practice today.(2)
Younger patients have higher rates of morbidity and mortality. In infants, the mortality rate ranges from 2–4%. The presence of necrotic bowel at surgery increases the mortality rate by 25 times for infants, and the presence of other anomalies

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increases the risk by 22 times. A report of 25 years' experience demonstrated congenital cardiovascular disease in 27.1% of patients with intestinal malrotation; those patients had a morbidity rate of 61.1% after intestinal malrotation surgery.(3)

Male predominance is observed in neonatal presentations at a male-to-female ratio of 2:1. No sexual predilection is observed in patients older than 1 year.

As many as, 40% of patients with malrotation present within the first week of life. This condition is diagnosed in 50% of patients by age 1 month and is diagnosed in 75% by age 1 year. The remaining 25% of patients present after age 1 year and into late adulthood; many are recognized intraoperatively during other procedures or at autopsy.

Intestinal malrotation is a congenital anomaly of rotation of the midgut (embryo logically, the gut undergoes a complex rotation outside the abdomen). As a result:

- The small bowel is found predominantly on the right side of the abdomen.
- The cecum is displaced (from its usual position in the right lower quadrant) into the epigastrium–right hypochondrium.
- The ligament of Treitz is displaced inferiorly and rightward.
- Fibrous bands (of Ladd) course over the horizontal part of the duodenum (DM), causing intestinal obstruction.
- The small intestine has an unusually narrow base, and therefore the midgut is prone to volvulus (a twisting that can obstruct the mesenteric blood vessels and cause intestinal ischemia).

This can lead to a number of disease manifestations such as:

- Acute midgut volvulus.
- Chronic midgut volvulus.
- Acute duodenal obstruction.
- Chronic duodenal obstruction.
- Internal herniation.
- Superior mesenteric artery syndrome.

The exact causes are not known. It is not associated with a particular gene, but there is some evidence of recurrence in families.(4)

Patients (often infants) present acutely with midgut volvulus, manifested by bilious vomiting, crampy abdominal pain, abdominal distention, and the passage of blood and mucus in their stool. Patients with chronic, uncorrected malrotation can have recurrent abdominal pain and vomiting. Malrotation can also be entirely asymptomatic. With acutely ill patients, consider emergency surgery laparotomy if there is a high index of suspicion.

Plain radiography may demonstrate signs of duodenal obstruction with dilatation of the proximal duodenum and stomach but it is often non-specific. Upper gastrointestinal series is the modality of choice for the evaluation of malrotation as it will show an abnormal position of the duodeno-jejunal flexure (ligament of Treitz). This normally lies to the left of the body of first or second lumber vertebra.(JJ) In cases of malrotation complicated with volvulus, it demonstrates a corkscrew appearance of the distal duodenum and jejunum. In cases of obstructing Ladd bands, it will reveal a duodenal obstruction.

In equivocal cases, contrast enema, may be helpful by showing the cecum at an abnormal location.

It is usually discovered near birth, but in some cases is not discovered until adulthood.(5A) In adults, the "whirlpool sign" of the superior mesenteric artery can be useful in identifying malrotation.(J6)

TEACHING POINT

Intestinal malrotation is a congenital anomaly of rotation of the midgut (embryo logically, the gut undergoes a complex rotation outside the abdomen). As a result; the small bowel is found predominantly on the right side of the abdomen. The cecum is displaced into the epigastrium right hypochondrium. The ligament of Treitz is displaced inferiorly and rightward. Fibrous bands (of Ladd) course over the horizontal part of the duodenum (Dll), causing intestinal obstruction. The small intestine has an unusually narrow base, and therefore the midgut is prone to volvulus (a twisting that can obstruct the mesenteric blood vessels and cause intestinal ischemia), can lead to Acute midgut volvulus, Chronic midgut volvulus, Acute duodenal obstruction, Chronic duodenal obstruction, lnternal herination, Superior mesenteric artery syndrome.

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Fig. l. Film of Barium Follows through showing small gut on right side with DJ on right.

Fig. 2. Film of barium follows through showing ileo-cecal junction in Left iliac fossa.

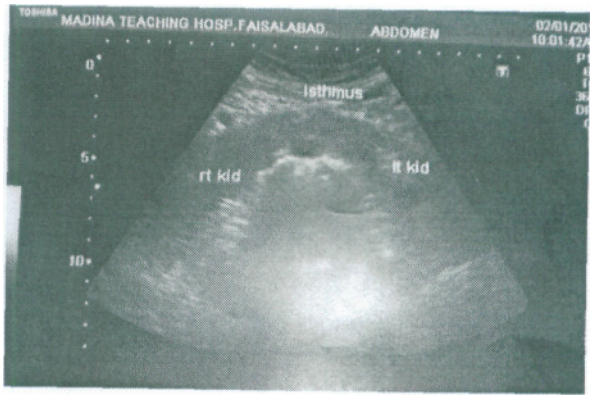

Fig. 3. Gray Scale Ultrasound, showing isthmus in the centre connecting both kidneys.

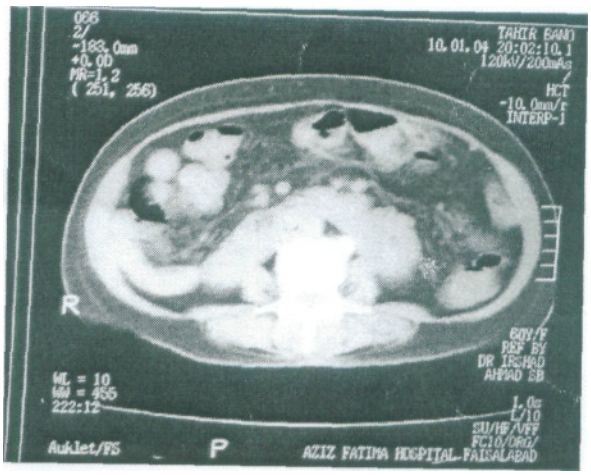

Fig. 4. Plain CT Abdomen showing isthmus in the centre connecting both kidneys.