

## APPENDICITIS IN A PATIENT WITH SITUS INVERSUS TOTALIS

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**Key-word: Appendicitis**

**Background:** An 18-year-old female presented with mild fever and persisting severe left lower quadrant abdominal pain for 2 days. Further anamnesis revealed progressive nausea and anorexia. There was no history of previous trauma or relevant medical history. Her last menstruation was 3 weeks before the symptoms started and she had had no sexual intercourse. The most notable abnormality upon physical examination was sharp tenderness at pressure in the left lower abdominal quadrant. Laboratory results showed increased inflammatory parameters (C-reactive protein of 60 mg/ml and white blood cell count of  $21 \times 10^3/\mu\text{L}$ ). B-mode ultrasonography (US) and contrast-enhanced CT scan of the abdomen were performed.

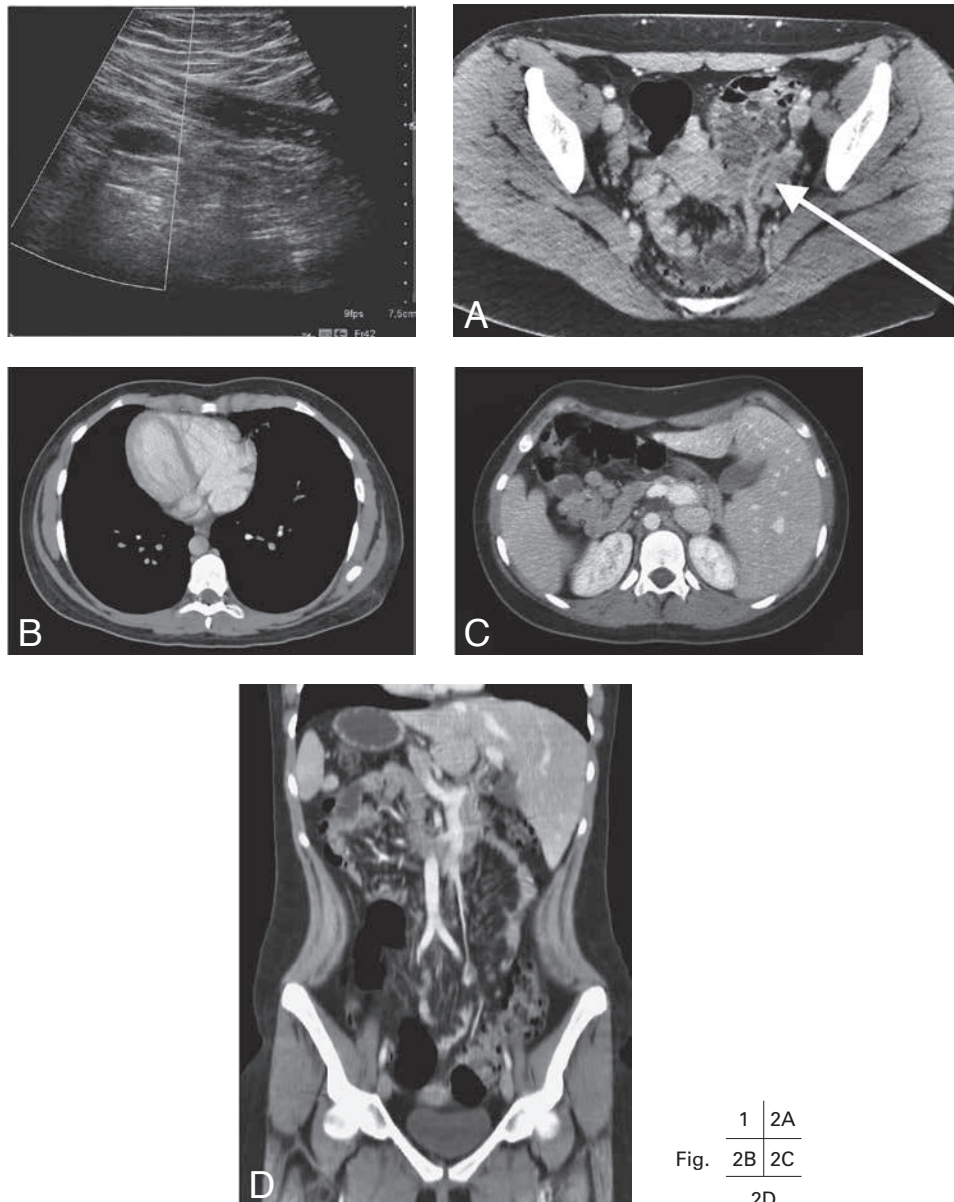


Fig. 

1	2A
2B	2C
2D	

## Work-up

Ultrasonography of the abdomen (Fig.1) consisted of an axial section through the left lower quadrant of the abdomen. There was pain at pressure with the probe in this area. No pathology is seen on this image.

Contrast-enhanced CT scan of the abdomen (Fig. 2) included axial section at the pelvic level (A) on which close to the left adnex, an obvious curvilinear structure, containing fluid (arrow), with enhancement of the wall, is seen. The maximum anterior-posterior diameter is 7 mm. There is no evident fat infiltration. Ventral to this structure intestinal loops, containing fluid and air bubbles, are observed. On axial plane at the cardiac level (B), dextrocardia is noticed. On axial plane at the level of the liver (C), the liver and gallbladder are located in the left hemi-abdomen, and the spleen in the right hemi-abdomen. Multiplanar reconstruction (MPR) in the coronal plane (D) confirms the mirror image of all thoracic and abdominal organs compared to the normal location.

## Radiological diagnosis

Based on the findings on ultrasonography and CT scan, combined with the clinical history, the diagnosis of *appendicitis* was suggested in a patient with *situs inversus totalis*.

Diagnostic laparoscopy confirmed the situs inversus totalis and an erectile appendix in the left lower abdominal quadrant. The appendix was removed and the patient was discharged from the hospital within one day.

## Discussion

Situs inversus totalis is a rare autosomal recessive congenital abnormality with an incidence of 1 per 10,000. There is no racial or sexual predilection.

When situs inversus is present, the liver and gallbladder are located on the left side, whereas the spleen and stomach are located on the right side of the body. The other abdominal structures are also located in a mirror position of normal. When, in addition, dextrocardia is present with the morphologic right atrium located on the left side and the morphologic left atrium on the right side, this is called situs inversus totalis.

Situs inversus totalis is in 20% of the cases associated with primary ciliary dyskinesia (known as Kartagener Syndrome). These patients have frequent sinusitis and pulmonary infections.

In this case, the patient presented with abdominal pain, one of the most common complaints in surgery. The diagnosis of appendicitis was based on clinical symptoms, physical examination and radiology. The position of the appendix can vary considerably, although it is mostly present in the right lower quadrant. Hence, left lower quadrant pain as manifestation of appendicitis is rare and misleading as in patients with unknown situs inversus.

In conclusion, situs inversus should be taken into consideration in a patient presenting with complaints of appendicitis, but with pain in an atypical localisation.

## Bibliography

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