

SITUS INVERSUS TOTALIS

A REPORT OF A CASE PRESENTING WITH AN 'ACUTE ABDOMEN'

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Complete heterotaxy, situs inversus totalis or, as this rare condition is more generally known, dextrocardia with complete transposition of the viscera may in the cool quiet atmosphere of the routine clinical examination provide a source of diagnostic difficulty, full discernment coming perhaps after radiographic investigation. When, however, the patient first presents as an acute abdominal emergency in the early hours of the morning the problem becomes magnified by the necessity for early surgical intervention with all the implications of accessibility and the difficulty of manoeuvring on a mirror-image of the normal and conventional anatomical arrangement of the abdominal viscera.

CASE REPORT

Mrs. A.T., aged 34 years and the mother of 2 children, had enjoyed perfect health until the present acute episode, which had persisted for 4 hours before medical aid was sought. Two hours after the evening meal she experienced an acute onset of severe colicky pain in the left hypochondrium lasting an hour. The pain persisted with a waxing and waning in intensity and she was still in obvious distress when she was seen. She felt extremely nauseous and bloated, suffering repeated belching. Recognizable food was vomited on 2 occasions and 2 loose bowel actions occurred during this time. The past history was irrelevant; her appetite had always been good, without disinclination for fried or fatty foods. Her menstrual history was normal.

She was a thin, young and anxious-looking patient, with a temperature of 99°F, pulse rate of 100 per minute and blood pressure of 140/90 mm. mercury. The tongue was clean and moist and there was no evidence of icterus. Routine examination of the chest was carried out and on auscultation of the heart it was startling to note the absence of heart sounds in the left chest, whilst clearly audible sounds emanated from the right praecor-

dium. The absence of tracheal displacement and of signs of pulmonary mischief made a diagnosis of dextrocardia very probable.

Abdominal examination disclosed a tender mass in the left hypochondrium which moved on respiration, and abdominal rigidity was localized to the left upper rectus. Vaginal and rectal examination demonstrated nothing abnormal and it was decided to explore the abdomen for acute left-sided calculous cholecystitis, the possibility of acute appendicitis in an undescended left-sided organ also being considered.

An upper mid-line incision was performed and inspection disclosed the visceral anatomy to be a complete mirror-image of the normal. The stomach, spleen and splenic flexure of the colon were situated in the right hypochondrium, the mesentery ran from right to left and the caecum and appendix were situated in the left iliac fossa. The lesser liver lobe was on the right, the main hepatic organ with the biliary apparatus being situated in the left hypochondrium.

Cholecystectomy was performed for acute calculous cholecystitis, the anatomy of the cystic artery, cystic and common bile ducts being a perfect mirror-image of the accepted normal without any variations. Appendicectomy was also performed and the abdomen was sutured with drainage of the gall-bladder bed. The patient made an uneventful recovery and was discharged from hospital in fit condition on the 8th post-operative day. Examination of the gall-bladder disclosed that cholesterosis had served as the basis for the two large cholesterol stones which were contained within it.

COMMENTARY

Though dextrocardia may exist alone, it is usually associated with complete transposition of all the thoracic and abdominal viscera, the structures retaining a perfect mirror-image relationship to each other. The heart is structurally and functionally healthy, the electro-

cardiogram demonstrating reversal of all the complexes in lead 1 whilst leads 2 and 3 are interchanged.

Kartagener (1933) described the association of complete heterotaxy bronchiectasis and congenital abnormalities of the paranasal sinuses manifested usually by absence of the frontal sinuses. Subsequent investigation of our patient did not disclose the existence of the other features of the triad which is generally known as the Kartagener complex.

Though there have been isolated case reports of the surgical abdomen associated with situs inversus there has been very little discussion regarding the relationship between the clinical features of visceral inflammation and the situation of the transposed viscus—Levering (1945), Broster (1944), Jooste (1945).

The autonomic nervous system provides the visceral sensory mechanism, the ill-localized referred sensation of pain, however, depending on the projection of stimuli along the corresponding somatic nerve by antidromic impulses from the appropriate spinal segment. Once irritation of the overlying peritoneum occurs the pain becomes localized over the affected viscus, as the peritoneum has a somatic sensory nerve supply. Muscular rigidity then develops as a visceromotor reflex, whilst tenderness and hyperaesthesia may

be construed as a viscerosensory reflex. It is unnecessary for the purpose of this discussion to complicate the issue by considering the phenomena of facilitation or the concept of the internuncial pool—Lewis (1942), Good (1952), Lorente (1938).

If situs inversus totalis is accompanied by transposition of the nervous pathways then the visceroneural pattern will remain constant, the clinical features of pain, tenderness and rigidity bearing a direct relationship to the site of the affected viscus. As the development of the nervous pathways is not necessarily related to the visceral development, it is conceivable that the visceral transposition may be unassociated with a similar change in the neural connexions. Under such circumstances it must be presumed that the clinical features would be ordained not by the visceral arrangement but by referred mechanisms to the site of its conventional anatomical situation.

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