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Case Report

An Isolated Dextrogastria Simulating Diaphragmatic Rupture in a Post-Traumatic Context

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ABSTRACT

We report a case of isolated dextrogastria discovered in imaging a 34-years-old woman who was in the emergency department for vomiting and fluctuating right chest pain following a road accident. It was a collusion between 2 motorcycles, the patient being a rear passenger, performing a whiplash mechanism with a brief initial loss of consciousness. The day after the accident, she complained of left cervical swelling, painful with dysphagia to solids. Physical examination revealed bilateral palpebral oedema. There was a decrease in right vesicular murmurs with symmetrical tympanism towards the base of the lung. The rest of the examination was normal. The chest x-ray showed digestive loops above the liver that appeared to be located in the right intra-thoracic, suggesting in this context a diaphragmatic rupture. The OGDT and the thoraco-abdominal CT made possible to correct the diagnosis of type II dextrogastria by showing the stomach and part of the colon located on the right, above the liver, under the diaphragmatic dome which is disembowelled, pushing back the lung homolateral up. There was also a deviation of the ipsilateral thoracic esophagus in continuity with the stomach. The liver, in the right quasi-lateral position, is forced downward, extending to the lower edge of the ipsilateral flank. The other viscera kept their usual topographies.

KEY WORDS: Dextrogastria, Isolated dextrogastria, Chest pain, Dysphagia.

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INTRODUCTION

Congenital abnormalities of position or attachment of the proximal part of the digestive tract are extremely rare and usually occur as part of the general transposition of the viscera. Isolated dextrogastria is the rarest of all visceral transpositions and usually coexists with a disembowelment of the right hemi-diaphragm [1].

The latter is a partial or total replacement of the diaphragm muscle with fibroelastic tissue while maintaining the diaphragmatic attachments to the sternum, ribs and lumbar spine [2]. We report a case of asymptomatic dextrogastria with a disembowelment of the right hemi diaphragm, discovered in a traumatic context posing a diagnostic problem between a diaphragmatic rupture and a diaphragmatic hernia.

OBSERVATIONS

It was a collusion between 2 motorcycles, the patient being a rear passenger, performing a whiplash mechanism with a brief initial loss of consciousness. (initial loss of consciousness not encrypted). Ground impact points could

not be specified. The other victims were unharmed. After regaining consciousness, the patient complained of headache without vomiting or any other associated signs. On admission, she presented an average general condition, conscious, well oriented in time and space, well colored conjunctiva, anicteric with the following parameters : AP = 180/90 mmHg; HR = 85 bpm; T = 36.5°C. There was bilateral eyelid edema, left cervical swelling along the carotid artery extending to the jugulomass-eteric region, the skin looking healthy. On palpation, throbbing mass, about 1.5 to 2 cm, mobile relative to the superficial plane, painful, hard in consistency. On auscultation, no breath. On pleuropulmonary examination, there was a decrease in vesicular murmurs on the right with symmetrical tympanism. There was no neurological deficit, the remainder of the exam was unremarkable.

On admission, a frontal chest x-ray was performed showing the digestive loops above the liver appearing to be located in the right intrathoracic area, suggesting a diaphragmatic rupture (figure 1).

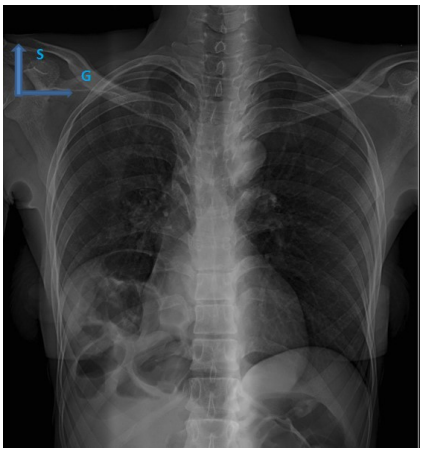

Fig. 1: chest x-ray showing digestive loops over the liver that appear to be located in the right intra-thoracic region.

An oeso-gastro-duodenal transit (OGDT) and a cervico-thoraco-abdominal computed tomography (CT) without and with injection of iodinated contrast product were subsequently performed and showed the stomach and part of the colon located on the right, above the liver, under the diaphragmatic dome which is disembowelled, pushing the ipsilateral lung upwards. There was also a deviation of the ipsilateral thoracic oesopha-gus in continuity with the stomach. The liver,

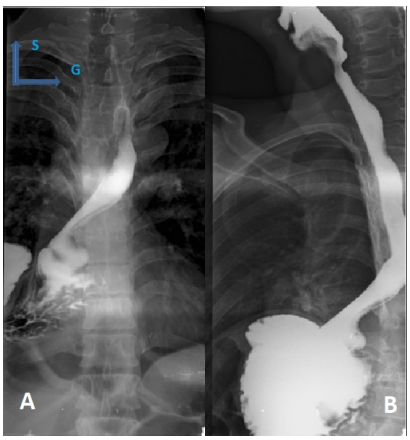

Fig. 2: TOGD face (a) and right anterior oblique (b) showing the stomach on the right with homolateral deviation of the thoracic esophagu

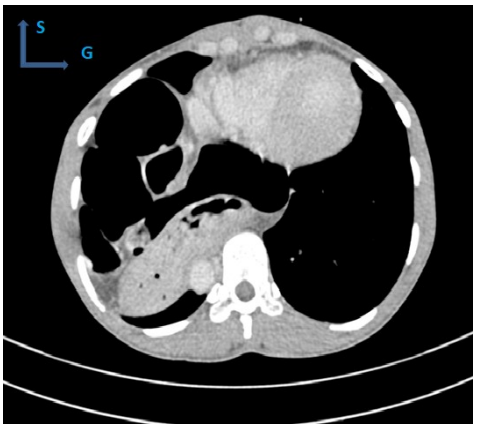

Fig. 3: CT axial slice after injection of iodized contrast agent showing the stomach (arrow head) and part of the colon (arrow) to the right.

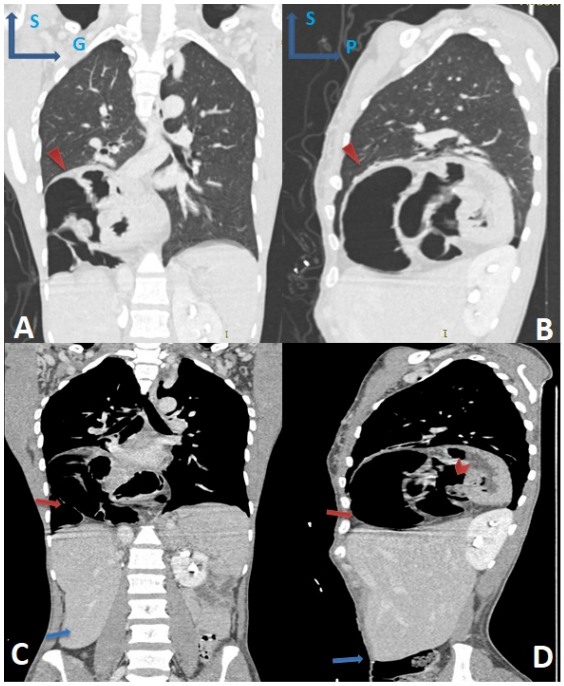

Fig. 4: Thoracic-abdominal CT after contrast injection. Coronal (a and c) and sagital (b and d) reconstructions showing the stomach (arrow head) and part of the co-lon (pink arrow) above the liver (blue arrow) and bounded at the top by the right diaphragm dome (pink triangle) which is dilated and keeps its integrity.

in the right quasi-lateral position, is forced downward, extending to the lower edge of the ipsilateral flank. The other viscera kept their usual topographies (figure 2; 3 and 4). These elements made it possible to make the diagnosis of type II dextrogastria.

DISCUSSION

Total situs inversus is relatively infrequent and occurs 1 in 6,000 to 8,000 births [1]. Partial or isolated visceral transposition is also rare and most often concerns the heart. The situs inversus isolated from the stomach, with otherwise normal positions of the thoracic and abdominal viscera, is an extremely rare abnormality that occurs in two distinct forms [3]. Type I is apparently even rarer than Type II with an incidence of less than 1in 100,000 [4, 5].

In type 1 dextrogastria, the stomach is completely behind the liver, but the thorax appears normal (Figure 5a); in type 2 dextrogastria, the stomach is above the liver in association with a disemboweld diaphragm (Figure 5b). In both forms, the Treitz ligament and all other viscera are in their usual position [3]. The stomach is formed by the primitive intestine. The bulging of the largest curvature of the stomach appears from the fourth week of fetal life. The oblique direction and curved shape of the stomach are the result of uneven growth, the stomach normally turning to the left. The duodenum deviates to the right as the stomach develops, and both attach themselves to an early stage before the growth and rotation of the middle intestine. Thus, the positions of the stomach and duodenum are generally very stable and rotation errors are much more likely in the middle intestine. The rotation of the stomach and the duodenal loop to the right, as in the isolated dextrogastria, forming a “mirror image” of the normal position without complete situs inversus, is therefore very rare, and there have been very few cases of complete isolated dextrogastria without further visceral movement [6].

Failure of the anterior intestine to rotate normally results in dextrogastria type I. If it is associated with failure of complete descent of the anterior intestine, dextrogastria with diaphragmatic disembowelment will occur (type II) [7]. Only isolated cases of either type have been reported [4].

Generally, both types of dextrogastria are asymptomatic and are incidentally discovered [4]. However, their radiological aspects, especially chest radiography, can lead to confusion with certain pathologies.

Man Mohan Harjai [3] reported a case of gastropexy posing a diagnostic dilemma with congenital diaphragmatic hernia in a newborn.

P. M. Hewlett [6] reported two cases in adult patients simulating a sub-phrenic abscess by the presence of a fluid level in sub-diaphragmatic radiography.

In our post-traumatic context, the association of gastropexy with a diaphragmatic disembowelment (type II) had made us evoke a post-traumatic diaphragmatic rupture on chest X-rays. The oeso-gastro-duodenal transit and the chest-abdominal computed tomography made possible to correct the diagnosis. Indeed, in the absence of a traumatic image on the abdominal viscera, in particular the liver, and of rib fracture or hemoperitoneum, the differential diagnoses of this anomaly also involve Chilaitidi syndrome [8] which is a pathology characterized by interposition of the colon or the small intestine in the interhepato-diaphragmatic space. Its radiological description requires the presence of the following criteria: the right diaphragmatic hemicupola must be raised above the liver by the intestine, the colon must be distended by air illustrating a pseudo-pneumoperitoneum and the upper margin of the liver should be lowered below the level of the left diaphragmatic hemicupola. However, the abdominal viscera remain intact, including the stomach, which keeps its normal left position.

CONCLUSION

Isolated situs of the stomach or dextrogastria is a rare malformation. This is a generally asymptomatic abnormality and found incidentally on imaging. The circumstances of discovery can sometimes confuse the diagnosis towards other conditions such as

diaphragmatic rupture. The eso-gastro-duodenal transit and the thoraco-abdominal computed tomography make it possible to rectify the diagnosis.

Conflicts of Interests: None

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