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CASE REPORT

A case of absent celiac trunk: case report and review of the literature

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Abstract We reported one case of absent celiac trunk in a 7 year old girl. She was referred to do computed tomography (CT) of the abdomen and pelvis to exclude acute appendicitis. On reviewing the images we noticed that the left gastric, splenic, common hepatic, and superior mesenteric arteries were arising independently from the abdominal aorta. Moreover there were 2 aberrant hepatic arteries, one from the left gastric and the other from the superior mesenteric. To our knowledge this pattern was never reported before. Recognition of such variation is important as it may affect several surgical procedures.

1. Case report

A young girl aged 7 years old, suffered from right lower quadrant abdominal pain and was referred to do computed tomography (CT) of the abdomen and pelvis to exclude acute appendicitis. She took oral contrast 1000 ml of oral contrast (non-ionic solution) over a period of 90 min. Then pre and post contrast CT scan was done using a Siemens SOMATOM definition Flash dual source scanner (Siemens Medical Solutions, Forchheim, Germany): tube voltage, 120 kVp, tube current 200 mA, slice thickness, 5 mm, 40 ml Xenitex at 4 m/s. Post contrast scan was done 60 s after intravenous injection of 40 ml (Xenetix 350, Guerbet, Nederland).

On reviewing the images celiac trunk was absent, instead the left gastric, hepatic and splenic arteries took separate origin from the aorta. The left gastric artery was the first branch to arise at the level of upper border of D12 (diameter = 3.5 mm) and coursed anteriorly toward the stomach. It was followed by the hepatic artery which originated from the right anterolateral aspect of the aorta at level of upper border of D12 (3 mm in diameter), it passed to the right in pre-portal supra-pancreatic course to reach the porta hepatis. It gives small branch that joined the left gastric artery shortly after its origin from the aorta. The splenic artery (4 mm in diameter) originated at the same level as the common hepatic artery but it was directed to the left toward the spleen. The left gastric

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artery itself gave a small aberrant hepatic branch to the left hepatic lobe. Another aberrant right hepatic artery originated from the superior mesenteric artery.

2. Discussion

The celiac trunk is the first ventral branch of the abdominal aorta which arises at the level of T12. The classical trifurcation of the coeliac trunk into the left gastric, the common hepatic and the splenic arteries was first observed by Haller in 1756. It is thus known as Tripus Halleri, which is considered as a normal pattern (1). The superior mesenteric artery (SMA) is the second ventral branch of the abdominal aorta which arises at the level of L1. Its normal branches include the inferior pancreatico-duodenal, jejunal, ileal, ileocolic, right colic and the middle colic arteries (2).

The anatomical variations in the celiac trunk and the superior mesenteric arteries were first studied and classified by Adachi in 1928 (3). The celiac trunk presents several anatomical variations such as the absence of one of its branches (bifurcation or incomplete celiac trunk), additional branches, and common origin with the superior mesenteric artery (celiacomesenteric trunk), common origin with the superior and inferior mesenteric artery (celiac-bimesenteric trunk) and total absence (4).

Absent celiac trunk is a rare anomaly, its incidence ranged from 0.1% (1) to 2.6% (5). According to Iacob et al. (6) only 31 cases were reported all over the world and about 1/3 of cases were detected by imaging studies, while the rest were detected during anatomical dissection. To our knowledge this is the first time to report a case of absent celiac trunk in the gulf area (see Figs. 1–5).

Although absent celiac trunk was not described in Adachi classification (3), it was added later in Moritta's classification (7). Morita proposed five types for the celiac trunk and four types (with 10 forms) for the celiac-mesenteric trunk. Morita's classification for the celiac trunk was (i) celiac trunk; (ii) hepatosplenic trunk; (iii) gastrosplenic trunk; (iv) hepatogastric trunk; and (v) absent celiac trunk (7).

In 1904, Tandler (8) proposed a hypothesis regarding the morphogenesis of the celiac trunk and the superior mesenteric artery. There are four primitive splanchnic arteries arising from the dorsal aorta in early human embryos and these arteries are connected to the ventral longitudinal anastomosis. During the developmental process, the primitive arteries are converged into three arteries corresponding to the celiac trunk,

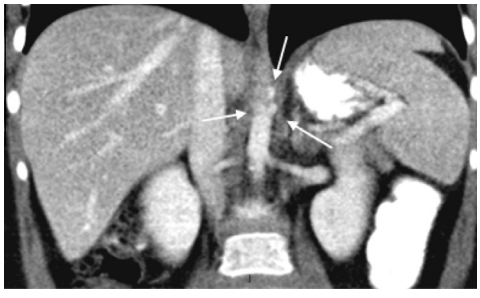

Fig. 1 Post contrast CT of the abdomen coronal reconstruction showing separate origin of the left gastric, common hepatic, splenic arteries from the anterior aspect of the aorta (arrows).

Fig. 2 Post contrast CT of the abdomen axial image showing separate origin of the left gastric artery from the aorta (white arrow), it appears joined by small branch from the hepatic artery (black arrow).

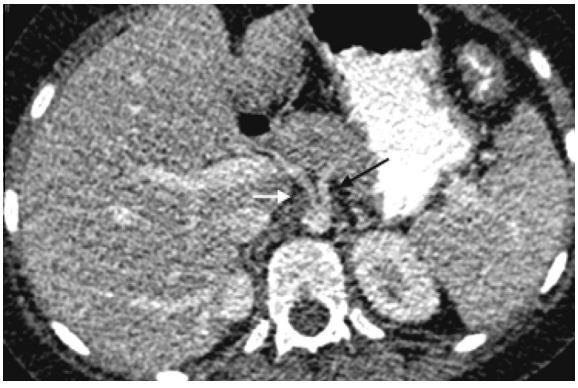

Fig. 3 Post contrast CT of the abdomen axial image showing separate origin of the common hepatic artery (white arrow) and splenic artery (black arrow) from the aorta.

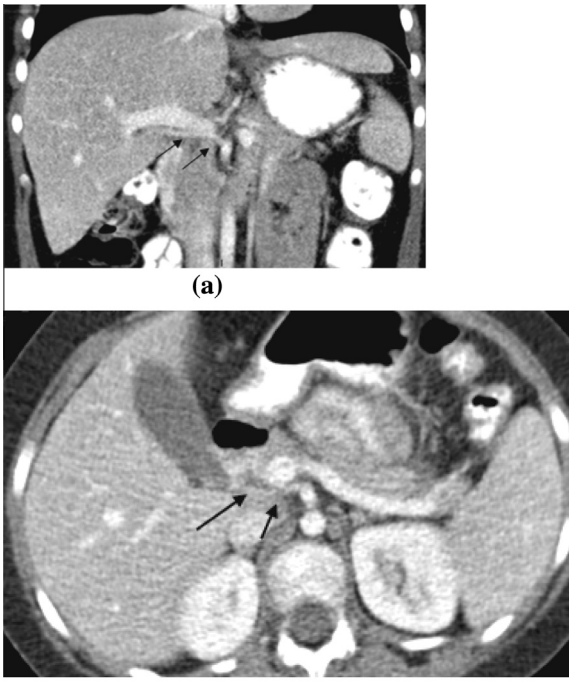

Fig. 4 Post contrast CT of the abdomen coronal reconstruction and axial images (a and b) showing aberrant right hepatic artery arising from the superior mesenteric artery (black arrows).