

Replaced right hepatic artery and abnormal left gastric artery giving origin to left hepatic artery in an individual; a rare pattern of hepatic arteries.

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A Computed Tomographic angiogram (CTA) of the visceral arteries was done in a 58 year old male with multi-detector (640 slices) Cannon-Aquilion one CT machine at Department of Radiology, National Hospital Colombo. The angiogram showed the following variations.

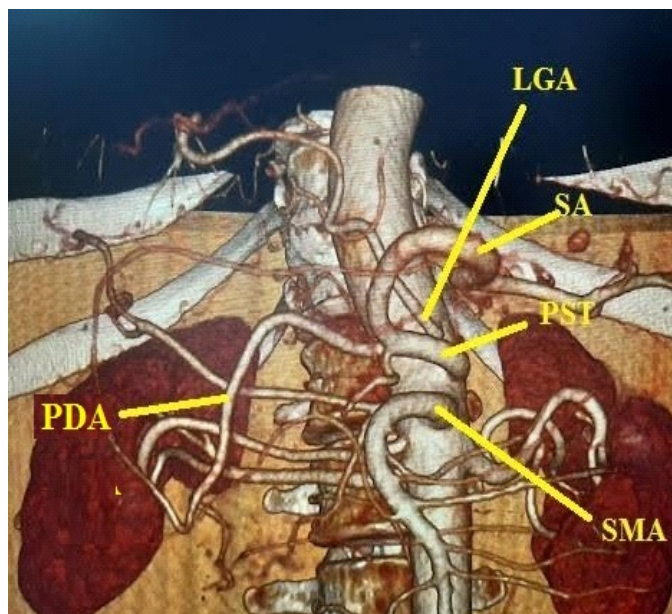


Figure 1: Image showing the visceral arteries [left gastric artery (LGA), superior mesenteric artery (SMA), Pancreatico-splenic trunk (PST), splenic artery (SA), and pancreaticoduodenal (PDA)]

Questions

1. What are the variations seen in the coeliac and mesenteric arterial system in the image?
2. What is the surgical significance of the above variations?

Answers

1. What are the variations seen in the coeliac and mesenteric arterial system in the image?

Celiac axis is the first ventral branch of the abdominal aorta. It usually gives rise to the common hepatic, splenic and the left gastric artery. Common hepatic artery bifurcates into left and right hepatic arteries. This standard hepatic arterial anatomy is seen only in 55-80 % of the population where as in others normal anatomical variants are encountered [1, 2].

The following variations were observed in the image above.

- a) The left hepatic artery (LHA) is originating from the left gastric artery (LGA).
- b) The LGA had an abnormal origin as a direct branch from the abdominal aorta proximal to the origin of the abnormal celiac axis.
- c) The right hepatic artery (RHA) is originating from the superior mesenteric artery (SMA).
- d) The celiac axis (CA) shows an abnormal branching pattern. CA divides into the splenic artery (SA) and the pancreaticoduodenal (PDA) artery i.e. "Pancreatico-splenic trunk" (PST). Thus, CA does not contribute to the hepatic arterial supply of this patient.
- e) The PDA which shows very tortuous course gave origin to the right gastric artery (RGA) as its terminal branch.

2. What is the surgical significance of the above variations?

A replaced RHA is seen in 5-21% of the population [1,2]. A replaced LHA is seen in 2- 10% of the population [1,3]. Having knowledge about these anatomical variations is important when making clinical decisions and during interventions because missing to recognize above variations can result in disasters.

For example in the case described above, accidental ligation of the LGA results in ischemia of the left lobe of the liver because the LHA originates from the LGA. Similarly during liver resections difficulty in identifying the variations can result in difficulties and accidental injuries to the hepatic

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arteries. Similar difficulties can occur in endovascular procedures and following hepatic vascular trauma. Therefore awareness of such variations is necessary to prevent complications.

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