

REPLACED RIGHT HEPATIC ARTERY IN UPPER GIT BLEEDING

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SUMMARY

The aim of this case report is to highlight an anatomical variant of the right hepatic artery during angiography. The course of surgery or endovascular treatment is very dependent on this information. A 67-year-old male patient with hypertension and diabetes mellitus was admitted to our institution due to episodes of upper gastrointestinal bleeding. The digital subtraction angiography scan showed the right hepatic artery (RHA) is originated from the superior mesenteric artery (SMA) rather than the usual RHA that is coming from the coeliac trunk.

Keywords: Coeliac plexus, Hepatic artery, Angiography.

1.0 Introduction

The anatomical variants of celiac trunk are not infrequent and the information of these normal variants is very important to the interventional radiologists and surgeons. Digital subtraction angiography (DSA) is the gold standard to map the vessel prior to any vascular related procedure. This examination is relatively invasive and is time-consuming, this examination is less favoured compared with CT angiography (CTA). CTA is becoming the leading investigative tool to map out the vessels.

2.0 Case Study

A 67-year-old gentleman with underlying diabetes mellitus and hypertension was admitted to our institution due to episodes of upper gastrointestinal bleed. The result of Esophagogastroduodenoscopy (OGDS) showed a Forrest 1B ulcer at the 2nd part of the

duodenum. The attending surgeon managed to place a hemostatic clip at the region of interest under. However, after a couple of hours, bleeding reappeared. A computed tomography angiography followed by digital subtraction angiography was performed in view of commencing treatment. The CTA with post-processing reconstruction into a 3D image and digital subtraction image (DSA) from the patient (Figure 1, Figure 2) showed the right hepatic artery (RHA) arising from the superior mesenteric artery.

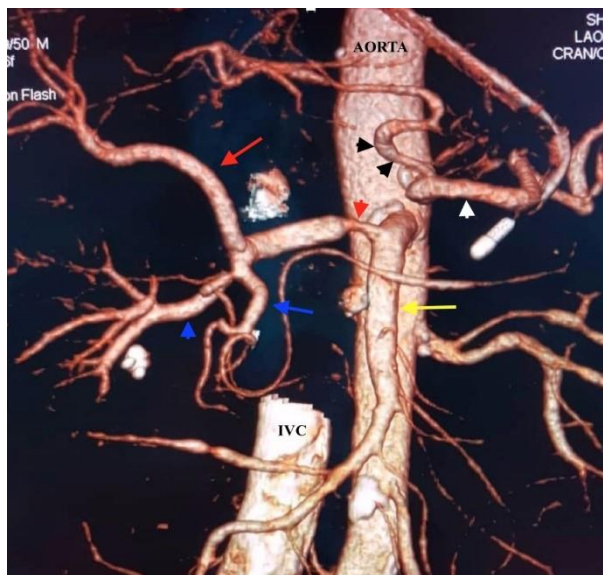


Figure 1

CT reconstruction image showing right hepatic artery (red arrow), Gastroduodenal artery (blue long arrow), Superior mesenteric artery (yellow arrow), Stenosed part of the right hepatic artery (red arrowhead), Left hepatic artery (Black Arrowhead), Splenic artery (white arrowhead), Segmental artery (blue arrowhead). The IVC is digitally removed.

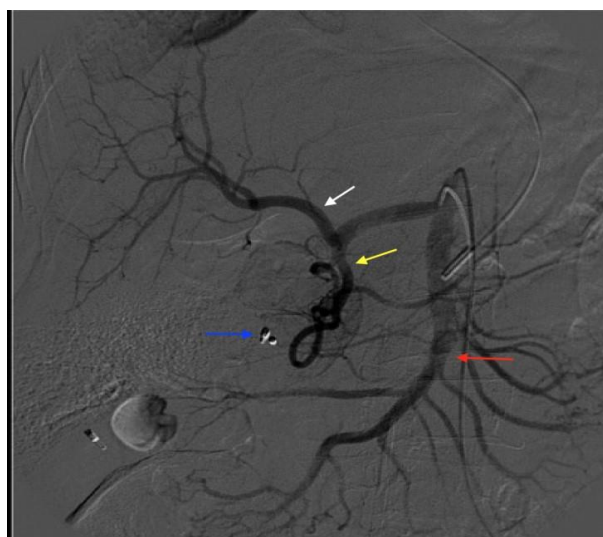


Figure 2

Digital subtraction angiography (DSA) image showing right hepatic artery (White arrow), gastroduodenal artery (Yellow arrow), surgical clips (Blue arrow), and superior mesenteric artery (Red arrow).

3.0 Discussion

CTA is a reliable modality to map the vessel anatomical structure (1). In this patient, the CT is enough to give the details. As shown in the attached image (Figure 1). A right hepatic artery (RHA) that is arising from the superior mesenteric artery is referred to as replaced right hepatic artery (rRHA) in the most literature (2, 3).

It was presumably found in about 3.7% of cases in the population (2). Michels et al had proposed a quite comprehensive work on the vasculature of the hepatic artery and its tributaries (2). The most common variant in this regard, the common hepatic artery (CHA) arises from the celiac trunk with other branches that feeding from the coeliac trunks are splenic artery, left gastric artery, and common hepatic artery which later give branches to the gastroduodenal artery (GDA), left hepatic artery (LHA) and right hepatic artery and this classical anatomy is regarded as the conventional normal anatomy in the literature. This normal anatomy represents up to 81% of the population (2). This is the variant that most of the interventional radiologist and surgeon are familiar. The GDA is particularly important in peptic ulcer patient particularly duodenal ulcer due to its close proximity to the 2nd part of the duodenum. Due to this anatomical structure; it can be a source of a to severe gastrointestinal bleed. The most recommended treatment for this complication is endovascular embolization of GDA with endovascular coils. The presence of this vascular anomaly gives challenges for the interventional radiologist, as the operator needs to understand the new normal pathway in order to plan and execute the treatment.

Fortunately, there was no contrast extravasation to suggest active bleeding in this case. The patient was treated conservatively. However, if we were to do empirical embolization of the GDA, we need to rule out whether the GDA is also supplying other parts of the bowel. The surgical clips that were placed previously will provide as the landmark for the embolization (Figure 2). Difficulties of cannulating this normal variant are anticipated due to stenosis of rRHA origin (Figure 1). To the intervention radiologist, the impact of this variant is slightly lower as compared to the surgeon, thanks to the arterial mapping during CTA, in which the anatomical variant can be recognized prior to embolization (4).

4.0 Conclusion

Variants of the right hepatic artery are best to recognised using CTA and Digital subtraction angiography, as it allows the attending operator to anticipate difficulties prior to endovascular or surgical intervention.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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