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Case Report

Anatomy Section

Atypical Arterial Supply to the Spleen by Polar Branches of Splenic Artery and Accessory Splenic Artery – A Case Report

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ABSTRACT

Vascular anomalies of the spleen are usually asymptomatic. However, variant anatomy of splenic artery becomes clinically important, when the patients undergo diagnostic angiography for gastrointestinal bleeding or during transcatheter therapy. We report here a concurrent variant arterial pattern of the spleen. The splenic artery was unusually elongated and excessively tortuous. Prior to its normal termination into segmental arteries, it gave superior and inferior polar arteries which entered the spleen distal to corresponding ends of the splenic hilum. In addition to this, the spleen also received an additional blood supply from an accessory splenic artery arising from left gastro-epiploic artery. The accessory splenic artery entered the substance of the spleen through its lateral end. Presence of such kind of concurrent variant arterial pattern of spleen makes the surgeons obligatory to have prior knowledge to prevent bleeding during any surgical or radiological interventional procedures targeting the spleen, pancreas etc.

Keywords: Accessory splenic artery, Polar artery, Splenic artery, Spleen, Variation

CASE REPORT

During routine dissection of supracolic compartment of the abdominal cavity, we observed normal origin of splenic artery from celiac trunk. Splenic artery was unusually long and was measuring 27cm and was excessively tortuous in its course. Its course towards the spleen was almost normal. But, before its termination in the hilum of the spleen, it gave superior and inferior polar arteries about 2cm and 4cm proximal to hilum of the spleen respectively [Table/Fig-1]. The superior polar artery entered the substance of spleen at the upper end of splenic hilum, whereas, inferior polar artery through the lower end of the hilum. About 5cm proximal to the origin of inferior polar artery, the splenic artery gave the left gastroepiploic artery, through which an accessory splenic artery arose and coursed into lateral end of the spleen artery. The accompanying veins of these variant branches eventually formed a splenic vein, which had normal course and termination.

DISCUSSION

Spleen is the hemo-lymph organ, receives its arterial source by splenic artery (SA). SA is the largest branch of celiac trunk and tortuous in its course. It normally runs in relation to superior border of body of the pancreas and then passes through the lieno-renal ligament to reach the hilum of spleen and divides into segmental branches [1].

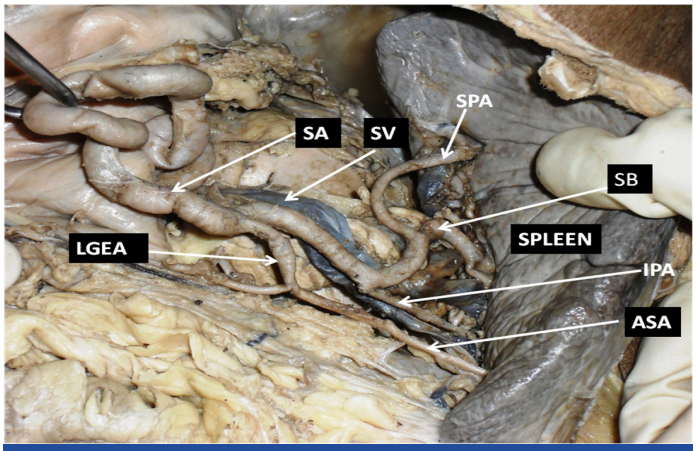
The normal branching pattern of the SA to spleen facilitates the splenic micro- circulation which is important for the organ to perform its normal function as part of reticulo-endothelial system. Reports on the variant origin of SA are abundant. But, anatomical variations in its branching pattern are very rare. Variant origin of the SA may be confined within celiac axis or external source. A study on this aspect reported that, in majority of the cases it arises from celiac trunk (90.6%). Rarely, it takes origin from abdominal aorta (8.1%) and from other sites (1.3%) [2]. In the classification of the branching pattern of celiac trunk by Michels, as many as 6 possible types of origin of SA are categorised according to which the artery may arise either from celiac trunk, superior mesenteric artery or from abdominal aorta [3]. However, reports on abnormal branching pattern of SA is relatively rare, as a result such an arterial variant patterns makes the case report worthy of attention.

SA, a prominent branch of celiac trunk terminates on or just before reaching the hilum of the spleen into segmental branches which enter the substance of spleen along the trabecular septa to subdivide into smaller branches [4]. Study by Holibkova suggested that the segmental branches are involved in three types of anastomosis. These are extra-parenchymatous, intra-parenchymatous and subcapsular [5].

Very rarely spleen is supplied by accessory splenic artery. Padmalatha et al., reported a case of SA giving rise to two polar arteries. The author has mentioned in the report that, SA branching anywhere within 1-12cm can be regarded as polar artery. In the same report, author also mentioned about presence of an accessory SA, originating from left gastroepiploic artery [6]. In the current case, we found similar observation except the main SA after giving rise to polar arteries terminated normally into the hilum of the spleen as segmental branches.

Prashant et al., in their extensive study on variant branching pattern of SA, reported early branching pattern of SA as primary branches which entering the spleen through mostly towards its ends were regarded as polar arteries [7]. Irrespective of diverse nomenclature of these branches, it is the fact that, these branches divide the spleen into definite vascular segments. Detailed knowledge about these segments will be useful to the surgeons during segmental resection of the spleen, as segmental removal preserve splenic tissues as much as possible.

Presence of accessory SA is not a common variation. Although the vascular variation of the SA are mostly due to improper embryological process of ventral splanchnic arteries [1], the presence of accessory splenic artery is said to be due to intra-parenchymatous anastomosis between the inferior polar artery of SA and the splenic branches of left gastroepiploic artery [5].



[Table/Fig-1]: Showing variant vascular pattern of Spleen by superior (SPA) and inferior polar arteries (IPA) taking origin from splenic artery (SA), an accessory splenic artery (ASA) originating from left gasro-epiploic artery (LGEA). SB: segmental branch, SV: splenic vein

Arterial variations of SA may be asymptomatic in normal life. However, it may lead to clinical emergency when such individuals undergo diagnostic angiography of GI bleeding or during transcatheter therapy [8]. Variant branching pattern of SA also attains clinical importance while performing total pancreatectomy for the treatment of carcinoma of pancreas [9]. Pakhiddey et al., reported a peculiar morphology and branching pattern of SA with multiple terminal branches to spleen and prominent branch to splenic flexure of colon and posterior gastric branches [10]. Unusual branching pattern of SA to distal one third of the transverse colon has been reported [11]. This atypical pattern of distribution of SA is vulnerable to bleed profusely during abdominal operations when they are overlooked [12].

CONCLUSION

Knowledge of presence of accessory SA becomes clinically imperative while ligating the SA during procedures involving splenectomy. Therefore, it is important for the surgeons to have awareness of these varieties of arterial disparity during surgical and radiological procedures of abdominal region to prevent dangerous bleeding if damaged.

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