

Case Report

Asymptomatic splenic artery thrombosis and the circulatory compensation by right gastroepiploic artery

VS Anandarani, Shifan Khandey

Abstract

Asymptomatic isolated splenic artery occlusion in adults is a rare splanchnic circulatory disorder. Isolated splenic artery thrombosis can occur due to various aetiological factors like trauma, chronic pancreatitis, liver transplantation etc. We present a case of isolated asymptomatic occlusion of splenic artery in a 60 year old male cadaver. There was no evidence, historical or otherwise, suggestive of the aetiology. Splenic artery thrombosis was well-compensated by the right gastroepiploic artery with its unusual branching pattern. Apart from the pancreatic branches, the right gastroepiploic artery was playing the role of splenic artery also. Care should be exercised, because in such cases, the splanchnic vascularity may get affected if the right gastroepiploic artery is used for coronary artery bypass grafting.

Key words: Splenic artery; thrombosis; gastroepiploic artery; splanchnic circulation.

Introduction

Variations in the splanchnic circulation are commonly reported. Splenic artery occlusion invariably presents with symptoms of splenic infarction. However, a case of isolated asymptomatic splenic artery occlusion, is being reported because of its rarity [1].

In the present case there was no relevant medical history suggesting the symptoms of splenic infarction or the aetiology of arterial occlusion. The right gastroepiploic artery had compensated the obstructed splenic circulation with a unique branching pattern. The role of splenic artery was being performed by the right gastroepiploic artery almost completely except for the pancreatic branches.

Case report

The case was noted in a male cadaver of 60 years during the routine dissection of abdominal cavity. The abdominal cavity and viscera were apparently normal. While tracing the branches of coeliac trunk, splenic artery was felt to be hardened throughout. The artery was traced to the hilum of spleen and its branching pattern was studied. The splenic artery had a normal origin and normal

branching pattern; but was hardened from its origin up to the termination. Arterial occlusion involved its branches also but the abdominal aorta and the coeliac trunk were apparently normal. Pre-hilar division of the splenic artery was noted. The narrowing of the splenic artery is clearly visible in the photograph by incising the artery midway [figure 1].

The splenic hilum towards the anterior end showed a separate artery entering the splenic parenchyma which was not a branch from the splenic artery. This artery was traced towards the pyloric end of the stomach to see its origin, which was found to be from the gastroduodenal trunk and was confirmed as the right gastro-epiploic artery [RGEA]. The branches of RGEA were traced out. As the RGEA continued forwards as the chief arterial supply for the spleen, it gave one branch to the greater curvature of stomach closer to the cardiac notch. Throughout its course RGEA was giving epiploic branches and one branch closer to the splenic hilum was unusually larger [figure 1]. Preserving all the important arterial branches of RGEA, the spleen was dissected out along with the stomach. The splenic vessels were incised away from the hilum of spleen. Medical records of the cadaver were reviewed for important points related to the case.

Dept of Anatomy, Sri Ramachandra Medical College, Chennai, India - 600116

Corresponding Author: Dr. VS Anandarani, Dept of Anatomy, Sri Ramachandra Medical College, Chennai - 600116 India.

Email : ranironeena@yahoo.co.in

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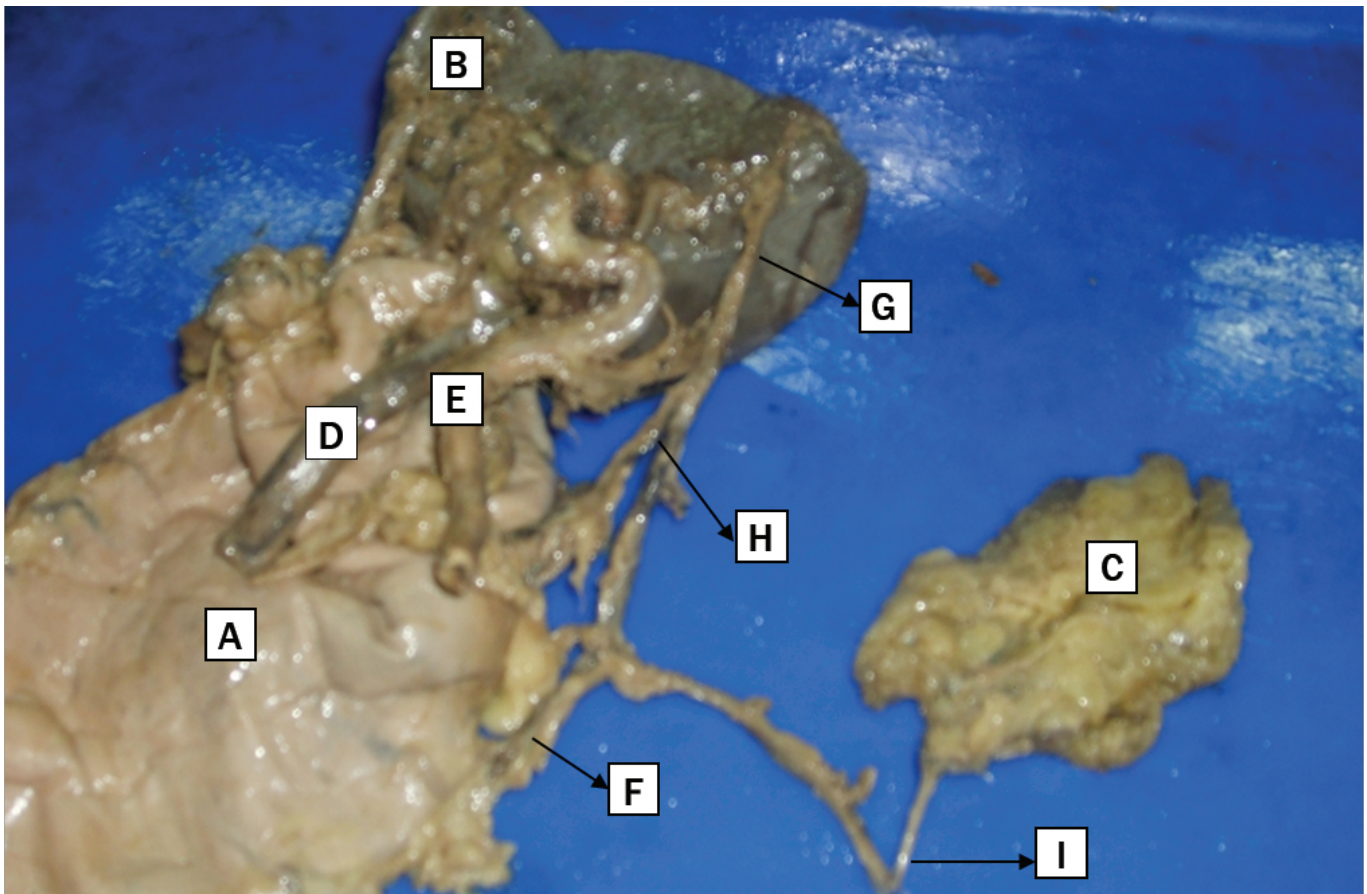


Figure 1- Specimen showing stomach and spleen.
 A. stomach, B. spleen, C. Greater omentum cut section, D. splenic vein. E. splenic artery, F. right gastroepiploic artery[RGEA], G. right gastroepiploic artery entering the spleen, H. branch from RGEA to the greater curvature, I. branch from RGEA to the greater omentum

Discussion

The splenic artery arises from the coeliac trunk and provides blood flow to spleen, pancreas and a major portion of the stomach. In this case splenic artery was tortuous as usual but felt hardened throughout its course. Branching pattern was normal but the branches were smaller and hardened like the main artery. Other splanchnic arteries were apparently normal.

The medical history of the cadaver revealed familial hypercholesterolemia and systemic hypertension detected at the age of 50 years (was under treatment for hypertension). Isolated splenic artery occlusion cannot be explained by atherosclerosis or hypertension. However, a plaque can get dislodged from the abdominal aorta into the splenic artery and thrombosis can progress to the distal part.

Thrombosis of splenic artery can occur in chronic pancreatitis associated with pseudocyst and

complicated by arterial pseudoaneurysms [2]. The splenic artery is commonly affected because of its proximity to the pancreas [3]. Torsion of the wandering spleen [4], blunt trauma, liver transplantation, pancreatectomy [5] and thromboembolism from cardiac source [6] are some of the aetiological factors of stenosis and occlusion of splenic artery.

Available medical records and cadaveric examination was not suggestive of any of the above-mentioned conditions. However, history of unreported mild abdominal trauma can not be ruled out. Asymptomatic splenic artery thrombosis in a child had been reported earlier [1]. The arterial occlusion must have progressed very slowly because the RGEA has taken over the role of diseased splenic artery in a well planned unique way. It may have been present as an anatomic variant since birth and might have become functional because of the pathological thrombosis of the splenic artery. Apart from continuing forward into the splenic

parenchyma as a supplementary splenic artery it gave branches to supplement the dysfunctioning left gastroepiploic artery. One gastric branch towards the cardiac end of the stomach and one unusually large epiploic branch from which smaller branches took origin could be traced.

The RGEA is used as an arterial conduit for the coronary artery bypass grafting [7]. Even in 1960s and 1970s it was used for indirect myocardial revascularisation [8,9]. Endoscopic doppler flow has shown no ischaemia in the greater curvature after the detachment of RGEA from the stomach [10]. But in the present case the RGEA has an added role of supplying the arterial blood supply because of a thrombosed splenic artery. Such cases may show arterial insufficiency after the detachment and it indicates the need for careful evaluation of splanchnic vascularity before using the vessel for grafting.

The anatomical variations in the coeliac trunk branches are due to developmental changes in the ventral splanchnic arteries [11]. In this cadaveric case, the splenic artery thrombosis may be pathological. The unique branching pattern can be of anatomical origin, which is well developed due to functional reasons.

Key Points

- Splenic artery abnormalities particularly stenosis and occlusion are rare among the acquired diseases of splanchnic circulation.
- Asymptomatic splenic artery thrombosis is still rare.
- In the present case, the atherosclerotic narrowing of the splenic artery must have occurred as a very slow process so that deficiency in the circulation is compensated by the RGEA.
- The branching pattern of RGEA may be a primary anatomical variation. But the collateral channels of RGEA are prominent due to the insufficient arterial flow via the splenic artery.
- If RGEA is detached for coronary bypass grafting in such cases, splanchnic circulation will be severely compromised.
- Such rare but significant reports are indications for careful pre-surgical evaluation of the splanchnic vasculature.

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