PERSPECTIVE

Anatomic variations of the celiac artery

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INTRODUCTION

The recent progress in the endovascular treatment of liver tumors gives interventional hepatic radiology a preponderant place in the therapeutic possibilities. The administration of drugs and/or embolization agents most often requires supra-selective catheterization of the feed-in arteries of the tumor in order to optimize the treatment and spare the non-tumor allover. These procedures (radio-embolization, chemo- embolization, intra-arterial hepatic chemotherapy) require a perfect understanding of the conventional anatomy of the arteries and its variants in order to plan and obtain the best approach possible as well as minimize the risks of intra and post-interventional complications. Therefore, embolization of the wrong arterial branches may lead to incomplete treatment of the target lesion or the toxic exposure of the liver parenchyma or healthy organs.

It arises from the celiac artery, runs obliquely forward and towards the right, thereby forming a concave curve from the aorta. The common hepatic artery runs to the right, along the upper border of the pancreas to the left side of the portal vein. It then splits at the mental foramen into the gastro duodenal artery and the proper hepatic artery.

Originating at the upper side of the celiac artery, it forms an arch until reaching the right border of the cardiac. This specific anatomy requires the use of catheters (for example, Simmons, SOS catheters, etc.) whose curvature allows the catheterization. The left gastric artery then splits into two terminal branches (anterior and posterior) running towards the lesser curvature of stomach. The posterior branch anastomoses with its homologue arising from the right gastric artery to form the arterial circle of the lesser curvature of stomach. It is therefore possible to catheterize the right gastric artery via the posterior branch of the left gastric artery.

Celiac trifurcation is found in 89% of the cases in the series, According to this study, 15 types of variations are described. Three of them are major: a heap to splenic trunk (4.5%), a hepatic mesenteric and gastro splenic trunk (2.5%), a celiomesenteric trunk (1%).Hepatic artery variations Right hepatic artery. A right hepatic artery is found in 10 to 30% of the population. It originates in the superior mesenteric artery (96%of the cases), or the pancreatic-duodenal trunk (4%). It runs within the space between the pancreas and the vena cava. The right hepatic artery is the first large artery to emerge from the superior mesenteric artery. When present, it almost always gives rise to the main or accessory cystic artery Left hepatic artery. It is found in 12 to 21% of the population. It origin a testing the left gastric artery and runs within the groove of Acanthus. When a vascular structure is present within this groove in the CT-scan or MRI, this indicates non-conventional hepatic arterial vascularization with the presence of at least one left hepatic artery. The left hepatic artery gives rise to small branches leading to the stomach and esophagus. In 70% of the cases, it is accompanied by another arterial variation: right hepatic artery (RHA), middle hepatic artery leading to segment IV.

The liver transplant is a very effective therapeutic option, with a significant increase in the life expectancy of patients suffering from liver failure or chronic liver disease. In view of the shortage of available grafts, transplantation from a living donor has become a choice alternative. The time waiting for a graft has been considerably reduced with the increase in available grafts. In the adult, the right liver transplant is the rule. The aping and perfect knowledge of hepatic vascularization is essential for the surgeon, in particular as regards the arterial supply of hepatic segment IV (surgical section plane)

Hepatic vascularization is complex, and anatomic variations very frequent. Nevertheless, it is essential to be able to recognize this both in convene imaging (planning of the procedure) and on angiography for any hepatic procedure by endovascular route. This perfect understanding helps optimize the treatment and avoids the "non targeted" arteries, responsible for sometimes severe complications.

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