Extrahepatic ischemic complications following transarterial chemoembolization for hepatocellular carcinoma

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Transarterial chemoembolization (TACE) is a treatment for intermediate-stage hepatocellular carcinoma (HCC), which selectively releases chemotherapeutic agents into the HCC feeding arterial branches and subsequently occludes them (1). HCC receives its blood supply from hepatic artery (Fig. 1). However, this arterial system can be connected to the arterial vascularization of surrounding organs due to its multiple anatomical variants (2). Because of these variants, chemotherapeutic agents can reach other organs triggering extrahepatic ischemic complications, as we show in the following three-patients series (Fig. 2 and 3).

Patient 1. A TACE for two tumors in I and IVa liver segments was performed. We noticed that the right hepatic artery (RHA) led to the left gastric artery, and, from the latter, tiny branches led to the esophagus. Despite a selective catheterization of HCC feeding branches during this procedure, a post-QETA hematemesis was presented, confirming a middle/distal esophagus ischemic involvement.

Patient 2. Three tumors in VII, VIII and VI segments were treated, which had a blood supply from the left hepatic artery. That artery started from the left gastric artery. Although a selective catheterization of HCC feeding branches, a gastric body and antrum ischemic involvement was observed.

Patient 3. A VII segment single-tumor treatment was performed, through an RHA catheterization. A small branch suggestive of a cystic artery was born from the distal part of the RHA. Following TACE an acute cholecystitis was presented.

Extrahepatic ischemic post-TACE complications are uncommon because it is an ultra-selective arterial catheterization procedure. Its clinical evolution is usually favorable with supportive treatment (as is seen in our patients), although cases that required surgical intervention have been described (3).

References:


Figure 1: A schematic image of the most common arterial anatomy of the celiac trunk and hepatic artery. Hepatocellular carcinoma is nourished by the branches of the hepatic artery.
Figure 2: Transarterial chemoembolization arteriography showing the anatomical variants in the first two patients.

Patient 1. The right hepatic artery is identified (A), from which the left gastric artery starts (B). From the latter, tiny arterial branches are born (C), suggesting esophageal branches. Ischemia would have been due to leakage of the chemotherapeutic agent through these esophageal branches.

Patient 2. The anatomical variant is that the left hepatic artery (A) arises from the left gastric artery (B). Therefore, gastric ischemia would be the result of the passage of the agent into the left gastric artery through collaterals that join both arterial systems.
Figure 3: Patient 3. Transarterial chemoembolization arteriography. The anatomical variant consists of the cystic artery (B) starting from a distal region of the right hepatic artery (A), when it usually originates in its proximal portion, near the proper hepatic artery. This variant facilitates the leakage of the chemotherapeutic agent into the gallbladder, producing acute cholecystitis, which can be observed on CT scan (arrows).