Commentary: A rare intracaval mass with intracardiac extension: A value of frozen section revisited?

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The most common types of intracardiac masses are myxomas, metastatic tumors, vegetations, and thrombi. Aberrant hepatic tissue (AHT) is a rare abnormality typically found in the abdominal cavity¹ and sometimes in the thoracic cavity. AHT has been classified as an accessory when connection to the liver parenchyma is maintained or ectopic when no such connection is evident.² In exceptionally rare cases, AHT can be found within the heart chambers and almost always in the right atrium (RA). The incidence of AHT presenting as an RA mass is limited to only a few case reports. In the majority of them, AHT was accidentally found in the RA mimicking the clinical course of atrial myxoma.²⁻⁵

There is no uniform theory explaining the incidence of AHT within the heart chambers. Clearly, there has to be a hematogenous spread of hepatic cells with regenerative potential to the heart chambers, and in the absence of trauma, the embryological explanation of this phenomenon is the most attractive.⁶ Embryogenesis of the heart and the liver occurs during the same period of development between the fifth and eighth weeks (Figure 1). The 2 developing organs will become separated only by the *septum transversum* (Figure 1, A), which will eventually develop into the diaphragm (Figure 1, B). More specifically, because of the close proximity of the caudate liver lobe to the inferior vena cava (IVC), during embryogenesis these regenerative hepatic cells have the potential to move to the IVC and then further to other areas of the body, including the heart chambers (Figure 1, C).^{6,7} The accessory hepatic cells develop into ectopic hepatic tissue or, if they still remain connected to the liver, to the accessory hepatic lobe (AHL). Perhaps the predominant incidence of AHT in the adult population suggests that once regenerative hepatic cells seed the heart chambers, they rest within them for a period of time, and then some unknown stimuli could initiate

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Central Message

Aberrant hepatic tissues is a rare finding in the right atrial mass.

See Article page e101.

their growth. Moody and colleagues² observed de novo AHT formation in the RA mimicking RA myxoma in a patient who did not have any evidence of any intracardiac mass 18 months before the definitive diagnosis was established.

Surgical treatment of cardiac tumors located close to the IVC is not always straightforward and in some instances requires unusual solutions.⁸ In this issue of the *Journal*, D'Angelo and colleagues⁹ report a successful application of deep hypothermic circulatory arrest (DHCA) for resection of AHL in the RA, which initially was thought to be an RA myxoma. A similar approach with the use of DHCA for the resection of AHL has been reported by Forest and colleagues.⁴ Use of DHCA seems to be a logical and valuable option providing a blood-free surgical field in the area of the RA-IVC junction, which helps to delineate the entire anatomy of the AHL. On the other hand, femoral cannulation, with the IVC cannula positioned just inferior to the retro-hepatic IVC, may provide sufficient IVC drainage to accomplish AHL resection without DHCA.^{3,5} Furthermore, a frozen section assessment, during which the normal heart function is restored and bypass is discontinued, could be helpful in some patients with a similar location of the RA mass to avoid extensive resection and reconstruction of the IVC wall in patients with a benign non-neoplastic lesion.

FIGURE 1. Development of heart, liver, septum transversum (A), and aberrant hepatic tissue (B, C).

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