Resection of an Adrenocortical Carcinoma Invading the Inferior Vena Cava Extending into the Right Ventricle

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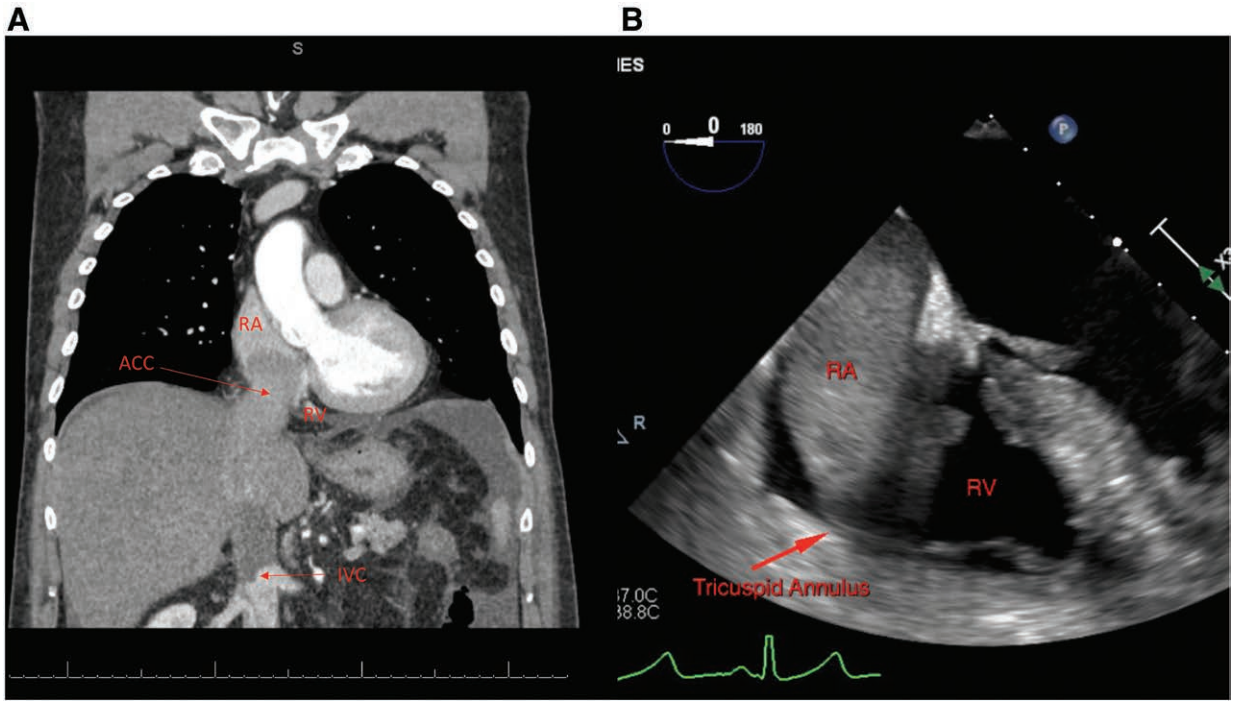

Adrenocortical carcinoma (ACC) is an uncommon and aggressive tumor with the potential to invade the inferior vena cava (IVC) and spread to the right atrium (RA) and right ventricle (RV) (image A).

Perioperative evaluation of a patient with a tumor invading the inferior vena cava includes a comprehensive analysis of the preoperative imaging studies (echocardiogram, computer tomography, or magnetic resonance) to assess for tumor extension and structures affected. Ultimately, tumor extension will determine the anesthetic management. Tumors occluding the inferior vena cava require large-bore central venous access above the diaphragm. Pulmonary artery catheter placement may not be recommended if the tumor is spreading into the right atrium because of the risk of tumor embolism.[1] Hepatic vein invasion may affect drug metabolism and coagulation. Increased collateral circulation will also potentiate the risk of intraoperative bleeding. Significant ascites places the patient at a higher risk for aspiration.

Mechanical obstruction may compromise preload significantly. The induction agents should be chosen to minimize cardiovascular depression, and the anesthesiologist may consider maintaining spontaneous ventilation to preserve preload to the heart. Cardiac surgery and perfusion teams should be on standby for emergency cardiopulmonary bypass.

Tumor pulmonary embolism is a feared intraoperative complication that can result in right ventricular failure, shock, and death.[2] Intraoperative transesophageal echocardiogram (image B; transesophageal echocardiogram exposing adrenocortical carcinoma protruding through the tricuspid annulus) provides instantaneous information about heart function and monitoring for embolic phenomenon during tumor manipulation.[3] Early detection of tumor embolism using transesophageal echocardiogram may lead to inferior vena cava clamping and the addition of cardiopulmonary bypass with or without deep hypothermic circulatory arrest.[2]

Competing Interests

The authors declare no competing interests.

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