Profound Vasoconstriction

Implications for Percutaneous Arterial Access

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In the management of severe respiratory failure, veno-venous extracorporeal membrane oxygenation is an increasingly used therapy that presents a unique challenge for anesthesiologists. Veno-arterial-venous extracorporeal membrane oxygenation is emerging as a strategy to treat refractory respiratory failure with coexisting cardiogenic shock. This image demonstrates profound constrictive effects of high-dose vasopressor therapy on arterial caliber and implications for percutaneous arterial access.

The accompanying computed tomography angiogram demonstrates a patient established on veno-venous extracorporeal membrane oxygenation using a bifemoral percutaneous approach. A 25Fr multistage access cannula and a 23Fr return cannula can be seen ascending the inferior vena cava via the left and right femoral veins, respectively, with their tips lying at the cavoatrial junction. A 8Fr arterial sheath was inserted percutaneously via the right femoral artery at time of extracorporeal membrane oxygenation cannulation to allow rapid arterial access if circulatory support was required in the form of veno-arterial-venous extracorporeal membrane oxygenation; the tip of the arterial sheath is labeled. At time of image acquisition, the patient was on high-dose vasopressor therapy (norepinephrine 0.8 mcg · kg⁻¹ · min⁻¹ and epinephrine 0.5 mcg · kg⁻¹ · min⁻¹). Severe vasoconstriction of the femoral and iliac arteries can be seen (yellow arrows) and is present bilaterally.

Anesthesiologists should be aware of the importance of gaining arterial access early in a patient on veno-venous extracorporeal membrane oxygenation with coexistent septic cardiomyopathy. Percutaneous arterial access may be very challenging when a patient is on high-dose vasopressor therapy. This image also demonstrates why distal limb perfusion must be monitored closely for ischemic complications if indwelling arterial devices are in situ.

Competing Interests

The authors declare no competing interests.

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