MEDICALLY CLEAR

A Practice Changer for Cardioversion in Obesity

BY DUSTIN BALLARD, MD, & DAVID VINSON, MD

A n emergency physician we know recently had a challenge. A very big challenge. Under the care of Akhila Pamula, MD, was a large man—6'5” and 500 pounds—who presented with palpitations. And diaphoresis. And a heart rate higher than 200 bpm, which surely contributed to him feeling a bit winded.

Dr. Pamula was not quite sure of the rhythm, but knew it was fast and lable with runs of what could be ventricular tachycardia. She knew that this gentleman needed emergent cardioversion and that sedation would be a significant risk. She also knew that cardioversion can be difficult in obese patients, with historical failure rates of 10 percent and higher. (European. 2018. doi: 10.1093/europace/euy285; Europace. 2012;14(5):666; Heart 2008;94(7):884.)

The Evidence
What is the best approach to electrical cardioversion of atrial dysrhythmias in the obese patient? This is a growing and evolving area in the literature. Ramirez, et al., reported tremendous success across all body habitus of a four-step approach to cardioversion for atrial fibrillation (AF). (Europace. 2018. doi: 10.1093/europace/euy285.)

Step 1: 200 J biphasic shock delivered using anteroposterior self-adhesive electrodes; step 2: 200 J shock with anterolateral configuration while applying pressure over the electrodes with disconnected standard hand-held paddles; step 3: 360 J biphasic shock delivered using the same technique as in step 2; step 4, wild type: at the treating physician’s discretion.

This protocol—the Ottawa AF cardioversion protocol, or OAFCP—was associated with a 99 percent cardioversion rate by adhesive patches. (J Cardiovasc Electrophysiol. 2019;30[2]:155; http://bit.ly/2Ty50AB.) The superiority of paddles over patches after the initial shock of 100 J, then 200 J if needed, was remarkable—90 percent (56/62) vs. 68 percent (43/63), respectively. The authors drew a sensible conclusion: “Routine use of adhesive patches at 200 J is inadequate in obesity.”

Interestingly, the success in this study was unaffected by electrode location and vector (anteroapical v. anteroposterior), which contradicts other studies. This investigation included a substudy of manual pressure augmentation (MPA), where they found MPA to be 80 percent effective in 20 patients who had failed to respond to 200 J with patches and paddles. The MPA technique seems simple enough—apply manual force to the adhesive patches with gloved hands for cardioversion during end-exhalation. Furthermore, it was safe and caused no injury to the physician. The trial did not directly compare initial augmented patch use with initial paddle use, but one could reasonably argue that physicians who lack handheld paddles should start with patches and MPA at 200 J. This, however, awaits formal evaluation.

The Verdict
Back to Dr. Pamula’s diaphoretic and tachycardic challenge. Given the uncertainty of the rhythm, she gave 12 mg adenosine, which briefly slowed his heart rate and demonstrated atrial tachycardia—P waves, some with different morphologies. Before long, his heart rate ramped back up, and he became more diaphoretic and, though his blood pressure was stable, it seemed unlikely that it would hold.

Sedation seemed risky, given his size and difficult airway assessment. After a brief shared decision-making discussion, the patient opted for cardioversion with light midazolam if needed, was remarkable—90 percent (56/62) vs. 68 percent (43/63), respectively. The authors drew a sensible conclusion: “Routine use of adhesive patches at 200 J is inadequate in obesity.”

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