

From Low Back Pain to CPR: A preoperative work-up
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Story From the Front Lines

An active 73-year-old male presented to his primary care physician for persistent low back pain and sciatica symptoms after trying physical therapy and oral medications. He was referred to neurosurgery, where elective lumbar spinal surgery was planned. The patient could walk at least two miles with only mild shortness of breath and no chest pain, but was limited in exercise by his back pain. He had a history of non-obstructive coronary artery disease diagnosed approximately 30 years prior, and a treadmill stress test eight years prior had 1mm upsloping ST segment depression, no chest pain, and he had reached 10 METS. No further intervention was recommended at that time. Upon review of his history, his primary care physician ordered a nuclear imaging stress test.

Our patient had no chest pain or EKG changes during the nuclear stress testing, but it demonstrated mild inferior ischemia. He was subsequently referred for elective cardiac catheterization. Left heart catheterization revealed 80% focal proximal and distal RCA stenosis, and he underwent percutaneous coronary intervention with two bare metal stents to the RCA. On a telemetry ward unit approximately one hour following the procedure, he had a witnessed polymorphic VT/VF arrest. He received four minutes of chest compressions, 1mg of epinephrine, and one episode of defibrillation, after which he had return of spontaneous circulation. Repeat cardiac catheterization immediately following showed patent RCA stents.

He did remarkably well following this episode, and was discharged only three days later with some mild rib pain as a result of the CPR. All further cardiac testing has been negative. Six months later, he is still struggling with persistent back pain, and awaiting his lumbar spinal surgery.

Teachable Moment

Pre-operative risk assessment is a common task assigned to general practitioners. It is important to note that one cannot “clear” a patient for surgery, but simply assess the medical and surgical risks they may face when undergoing the planned procedure. The 2014 ACC/AHA guidelines recommend a stepwise approach to perioperative cardiac risk assessment, in which the provider should calculate the perioperative risk of a major adverse cardiac event (MACE). [1] Commonly accepted risk models include the Revised Cardiac Risk Index (RCRI) and the ACS NSQIP Surgical Risk Calculator. Using these calculators on our patient, his RCRI was 0.9% and NSQIP risk of cardiac event <1%. Given these risk assessments, no further testing was indicated. If he had had a MACE risk of >1%, he was walking two miles per day, which is easily ≥ 4 METS, and again no further testing would have been indicated. Our patient’s nuclear stress test was ordered based on previous data, rather than a current assessment of his functional status and risk.

Preoperative stress testing continues to be frequently performed, but there is no strong evidence that revascularization reduces the perioperative risk. The CARP trial randomized 510 patients with stable CAD undergoing elective vascular surgery to revascularization or medical therapy only prior to surgery, and there was no significant difference in long-term survival or, in the perioperative period, death, MI, CVA, or length of hospitalization, between the groups [2].

Unfortunately, routine testing without performing a systematic risk assessment is still occurring. Rates of preoperative stress testing remain around 1-2%, where they have been since prior to initial recommendations were issued in 2002. [3] Reflexively ordering stress testing may lead to unnecessary additional procedures for a patient with stable disease, and complications with those procedures. Our patient suffered a post-revascularization cardiac arrest requiring defibrillation and chest compressions. Although this is not a common outcome with revascularization, it can happen. It is critical for providers to consider the consequences of testing when ordering an indicated test, as it can have serious effects on their patients. Our patient was revascularized six months ago, and is still awaiting his neurosurgical procedure for low back pain.

References:

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- [3] Sigmund AE, Stevens ER, Blitz JD, Ladapo JA. Use of preoperative testing and physicians' response to professional society guidance. *JAMA Intern Med*. 2015;175(8):1352-1359.