

Perioperative Cardiovascular Evaluation and Management

General principles – Because of the aging population, an increasing number of older adults, who may be at risk for coronary artery disease (CAD), are undergoing surgeries. In general, tests should be ordered when indicated, rather than routine prior to surgery. It is seldom appropriate to perform coronary revascularization prior to surgery unless it would otherwise be indicated. Perioperative ischemia is often not accompanied by pain and the mortality rate ranges from 30-70%. This is a topic for which the guidelines soon become outdated. More recent evidence is discussed in the following cases. The questions we need to ask ourselves on most of these patients are:

- Who needs noninvasive cardiac testing (exercise or pharmacologic stress testing)?
- Who needs changes in medical management?
- What should be done in a patient with known CAD or positive stress test?
- What should be done postoperatively for patients at risk for adverse outcomes?

Patient 1

A 36-year-old female with history of diabetes mellitus and hypertension presents for preoperative assessment prior to knee arthroscopy. She has no chest pain or dyspnea on exertion. She runs 1 mile, 3 times a week. She is on metformin and lisinopril. Blood pressure is 118/70, heart rate is 68. Her exam is otherwise normal. ECG shows normal sinus rhythm and is otherwise unremarkable.

Is noninvasive testing (NIT) indicated?

Is a change in medical management indicated?

Patient 2

A 57-year-old male with no past medical history is planned to undergo resection of a brain tumor tomorrow. He never has chest pain or pressure. He ran on a treadmill three times a week for 30 minutes up to one month ago, when his neurologic symptoms started. Blood pressure is 150/80, heart rate is 80. He was told in the past that his blood pressure was elevated and, under the direction of his physician, tried lifestyle modification in attempt to control his blood pressure. His blood pressure had not been retested since he began these efforts. His exam is unremarkable. His ECG shows normal sinus rhythm and is otherwise normal.

Noninvasive testing?

Change in medical management?

Patient 3

A 56-year-old male with a history of end stage renal disease on hemodialysis, tertiary hyperparathyroidism, and HTN was admitted with a right femoral neck fracture. You are asked to do preoperative risk assessment. He has no chest pain. He can't walk more than 30 feet because of weakness and pain. He had broken his left hip 9 months ago and never fully recovered. Blood pressure is 120/80, heart rate is 72. His exam is otherwise normal. His ECG shows normal sinus rhythm.

Noninvasive testing?

Change in medical management?

What should we do for post-operative surveillance?

Patient 4

A 60-year-old female with cerebrovascular disease, peripheral vascular disease, and HTN is scheduled for a breast lumpectomy. She had an adenosine myocardial perfusion test one year ago, which was normal. She presents for preoperative evaluation and states that she has had exertional chest pain for the past 1 month. Blood pressure is 120/80, heart rate is 56. Her exam is otherwise unremarkable. Her ECG shows normal sinus rhythm and is otherwise normal. Her medications include metoprolol 50 twice a day, atorvastatin 20 mg every day, and aspirin 325 mg every day.

Noninvasive testing?

When she follows-up to go over the results, she states that she has had several episodes of chest pain, while at rest, in the last week.

Should she undergo angiography?

Patient 5

A 67-year-old man with a history of HTN and CAD status post coronary artery bypass graft 2 years ago is planned for left hemicolectomy for colon cancer. The patient never has chest pain or pressure. Blood pressure is 140/90 and heart rate is 72. His examination is unremarkable. His medications include aspirin 325 mg every day and atenolol 25 mg every day. His activity is limited due to osteoarthritis. He can walk 1 block at a time without chest pain or dyspnea.

Noninvasive testing?

Change in medical management?

Postoperative surveillance?

Patient 6

A 57-year-old woman is seen for increasing angina. An adenosine thallium scan reveals an area of ischemia in the anteroseptal region. Cardiac catheterization today reveals a 90% stenosis of left anterior descending artery. She is scheduled for percutaneous coronary angioplasty (PTCA) and stenting tomorrow. A general surgeon calls you because he had planned to do an elective laparoscopic cholecystectomy on the patient next week. The patient has had several episodes of biliary colic in the past, the last of which was many months ago.

How should you proceed?

How soon after percutaneous coronary intervention can she proceed with her cholecystectomy?

Patient 7

A 71-year-old obese man with HTN and recent onset of dyspnea with exertion is to undergo a bowel resection for a 3 cm adenomatous polyp near the cecum. He had no prior cardiac history but on exam was noted to have a III/VI systolic ejection murmur at the right upper sternal border. The rest of his exam is unremarkable.

Does this patient need further testing?

If yes, what test would you order?

Patient 8

A 63-year-old male with a history of CAD, congestive heart failure, and nonsustained ventricular tachycardia status post pacemaker/automated internal cardioverter-defibrillator (AICD) placement 4 years ago presents for preoperative evaluation. He is scheduled for an axillary lymph node biopsy. He has no chest pain and now runs 1 mile

3 times a week with no dyspnea. His ECG shows normal sinus rhythm with old inferior Q waves present.

Does he need noninvasive testing or other testing prior to this procedure?

Do you recommend any special considerations in light of his pacemaker/AICD?