A 64-YEAR-OLD MAN WITH A RECENT KNEE INJURY AND A REMARKABLE CARDIAC AND GI HISTORY

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**CONTEXT**
This case study represents the lower right quadrant of the 2 x 2 risk stratification/therapy selection matrix described in the interview with A. Mark Fendrick, MD (see Figure, page S516). The patient is at risk for gastrointestinal (GI) complications from the use of nonsteroidal anti-inflammatory drugs (NSAIDs) and requires aspirin prophylaxis to protect against cardiovascular events.

**PRESENTATION**
David is a 64-year-old accountant who retired 2 years previously but still works as a consultant for his former company 2 days per week. He monitors his diet carefully, takes a brisk 2-mile walk 3 times per week, and plays "purely recreational" tennis with his older brother once per week.

David and his wife enjoy ballroom dancing and go to a dance or an instructional session at least once per week. One night, during an introductory tango lesson, David tripped over an unsecured sound system wire, taking a nasty spill and injuring his right knee. Cold compresses provided little pain relief. The next morning, he found it impossible to put any weight on his right leg.

**MEDICAL HISTORY**
David first developed dyspepsia in his early 20s while in graduate school. Avoiding spicy foods, alcohol, coffee, chocolate, and cola provided incomplete symptom relief. He also suffered from tension headaches at that time and took aspirin periodically. During his first semester of graduate school, he noted back stools and lightheadedness, and a bleeding peptic ulcer was diagnosed. The bleeding resolved with transfusions and without surgery. His symptoms resolved with discontinuation of aspirin use, graduation, and cimetidine therapy. He stopped taking cimetidine for his stomach a few years later and has remained without symptoms.

When David was 59 years of age, the company he worked for encouraged all executives to have a "cardiac checkup" and agreed to pick up all costs. As comptroller of the company, David qualified. Although he had absolutely no symptoms of heart disease and none of the modifiable risk factors—his lipid profile was excellent, his blood pressure and glucose levels were normal, he was slim and trim, he jogged and played tennis regularly, and he did not smoke—he did have a positive family history. His father died from a massive first myocardial infarction (MI) at age 48 years and his father's younger brother had a nonfatal MI at age 51 years and a fatal MI 8 years later. David's older brother, who was a smoker and did not eat a healthy diet, had angina for several years before undergoing coronary revascularization at age 55 years.

David opted for the cardiac checkup and was shocked to learn that his stress test results were highly suggestive of blockage in at least 1 coronary artery. Angiography 1 week later revealed obstructions of 98% in the left main coronary artery and 90% in the left anterior descending artery. Bypass grafting of these arteries was scheduled immediately and successfully performed 2 days later. David was discharged from the hospital with instructions to

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continue his usual diet (low fat, low cholesterol, no spicy foods, alcohol, or coffee), resume exercise gradually, take low-dose aspirin daily, and report any dyspeptic symptoms. At semiannual checkups, he reports rare GI symptoms that resolve with occasional over-the-counter famotidine therapy.

**PHYSICAL EXAMINATION**

David is 5 ft, 8 in tall and weighs 148 lb. His vital signs and other findings are normal, except for some minor bruising along the right side of his body. The area around the right knee is tender and beginning to swell and discolor. Careful palpation of the knee suggests damage to the collateral ligaments, meniscal tears, and small injuries. Range of motion is reduced. The patella appears to move freely, but not painlessly. When asked if he has ever had problems with either knee before last night’s fall—for example, after jogging, walking, or tennis—he says, “They have been aching lately, but not badly enough to take anything.”

**LABORATORY FINDINGS**

Radiography of the right knee rules out fracture and confirms the physical examination findings. Although the cruciate ligaments are intact, there are signs of osteoarthritis—specifically, some cartilaginous erosion and slight joint space narrowing. Radiography of the left knee also reveals signs of osteoarthritis.

**TREATMENT**

David is given a prescription of rofecoxib 50 mg daily for 10 days for the acute pain and instructed to reduce the dose to 12.5 mg daily thereafter. His physician orders a Helicobacter pylori fecal antigen test and also prescribes lansoprazole 30 mg daily. He is told to continue low-dose aspirin and report the quality of pain relief by the end of next week. He is given instructions regarding the signs of recurrent bleeding and is told to report the recurrence of any GI symptoms at any time. He is also told to wear an elastic knee brace to support his knee while the soft tissue injuries heal, and to call immediately if the swelling increases or if the knee looks or feels worse in any way.

**DISCUSSION**

It is clear that David requires low-dose aspirin therapy to prevent restenosis of his coronary arteries and protect him against a cardiovascular event. Considering the degree of obstruction in 2 coronary vessels before undergoing bypass surgery, he was lucky that he didn’t have symptoms of ischemic heart disease or a major coronary event. Although it may be reassuring that he has not developed recurrent dyspepsia or bleeding without concomitant therapy while on low-dose aspirin since undergoing bypass surgery, his increased risk of a recurrent ulcer bleed can be substantially reduced by a number of interventions. All patients with a history of bleeding ulcers should be tested for H pylori infection and treated if positive. In addition, advancing age, his concomitant cardiovascular disease, and his history underscore the need to implement a strategy to reduce risk of recurrent bleeding. The addition of any anti-inflammatory agent—either a cyclooxygenase-2 (COX-2) selective inhibitor or a traditional NSAID—to his aspirin, an important risk factor in its own right, argues in favor of the addition of a gastroprotective agent.

Because this patient is at increased risk due to his history and the use of aspirin, it is appropriate to use the safest anti-inflammatory agent available, such as a COX-2 selective inhibitor. Given concerns that concomitant aspirin reduces the safety of these agents compared with their established benefits in non-aspirin users, a gastroprotective agent is also required. Options include the use of the oral prostaglandin analog misoprostol or a proton pump inhibitor (PPI). Lansoprazole, a PPI that provides secondary NSAID ulcer prophylaxis with fewer side effects, was chosen for this high-risk patient. He should remain on the PPI as long as anti-inflammatory therapy is prescribed and be treated for H pylori if testing confirms active infection. Eradication of the organism reduces recurrent ulcers in patients taking aspirin alone, but recent studies confirm the incremental value of a PPI in this situation, thus establishing its value in such high-risk aspirin users.