

# Avoid Missing an MI Diagnosis: Use Objective Tests

BY HEIDI SPLETE  
Senior Writer

WASHINGTON — Don't exclude a diagnosis of myocardial infarction unless you have done objective testing first, Dr. Corey M. Slovis said at the annual meeting of the American College of Emergency Physicians.

A missed diagnosis of myocardial infarction (MI) is a leading cause of emergency department malpractice awards in the United States, noted Dr. Slovis, chairman of the emergency medicine department at Vanderbilt University, Nashville, Tenn. Even though chest pain is a hallmark of acute MI, this pain may be absent or fleeting, and it may not be substernal. In fact, chest pain may be stabbing, pleuritic, or palpable.

"My goal is for you to accept that in some cases, testing is better than clinical judgment," Dr. Slovis said. "There are

times when an objective test is better than no test."

Enzymes can be helpful tools in diagnosing acute myocardial infarction, but they should not be used in isolation. "One set of negative enzymes does not mean the absence of acute coronary syndrome," Dr. Slovis said. He cited a 2001 meta-analysis of 22 years' worth of studies, which showed that a single set of enzymes missed 51%-63% of all acute MIs.

Myoglobin, creatine kinase, and troponin can serve as markers of acute coronary syndrome, but troponin is usually the most sensitive. Even so, troponin is not 100% sensitive, nor does it reliably pick up unstable angina, Dr. Slovis said.

He emphasized several enzyme caveats:   
▶ Enzymes are rarely positive early in an acute myocardial infarction.   
▶ Enzymes are almost never initially positive in patients with nondiagnostic ECGs.

▶ Delta values are more accurate than single values.

▶ Enzymes are not reliable for ruling out unstable angina.

In the area of ECGs, Dr. Slovis explained how to avoid mistakes. (See box.) "Remember that one ECG begets another," he said. He cited data from several studies between 1977 and 2001 in which an average of 4%-5% of patients with documented MIs presented with normal ECGs.

Objective tests that can help diagnose ischemia are exercise tolerance tests, nuclear studies, stress echoes, or perhaps even CT coronary angiograms.

If you can't get an objective test on very low-risk patients—specifically young, healthy people you are ready to send home after you have decided there is "no chance" that it is a heart problem—have them run in place at the bedside. Calculate the patient's maximum heart rate (220 minus their age), then get their heart rate up to about 75% of maximum, and if they have chest pain or ST-segment changes, admit them. "It's not as good as a really expensive treadmill, but it is so much better than nothing," Dr. Slovis said.

In addition to ischemia, doctors need to be on the lookout for aortic dissection, he said. They are required to ask three questions of patients with chest pain to be sure they don't miss that condition; unfortunately, many physicians ask only one or none of them:

▶ Did the pain start as a tearing or ripping sensation?

▶ Did the pain start at maximum intensity rather than building in intensity?

▶ Did the pain radiate to the back, abdomen, or legs?

Document as many variables as possible for two reasons: You are less likely to miss

things, and you can code the patient's visit at a more appropriate higher level.

If you determine that a patient needs a cardiologist, call one. Document the exact time that you turned the patient over to a cardiologist—it can come back to haunt you in a lawsuit.

Atypical is typical, Dr. Slovis emphasized. Doctors are much more likely to miss acute MI in patients who present with a lack of typical symptoms. A diagnosis of acute myocardial ischemia is too important ever to miss, yet mistakes in MI diagnosis are made all the time.

"One missed MI can change your life, and that of your family and patients, forever," he said. "When you miss an MI and get sued, you aren't notified on Monday and settle by Friday; it is 2-4 years of depositions, fact-finding, and interrogatories." ■

## Five Simple Rules for Catching MIs

1) **Atypical is typical.** No one is absolutely typical. Don't waste time trying to find that one thing that will let you avoid doing a full work-up.

2) **Older patients are different.** The elderly present with different symptoms than younger patients. The only symptoms an older patient may have are shortness of breath, weakness, syncope or near-syncope, diaphoresis, and nausea or vomiting. Older patients are often misdiagnosed because they don't present with "classic" MI symptoms.

3) **ECGs: Read, reread, repeat.** After reading an electrocardiogram, reread it and look for the five patterns of

acute MI and for evidence of localized ischemia.

4) **Perform delta enzyme analysis.** One set of enzymes will be more likely to miss, rather than diagnose, an early acute MI.

5) **Conduct an objective test.** Develop a chest pain protocol that allows for an evidence-based approach to patient evaluation. Base the protocol on risk, ECG findings, age, and ability to run. Conduct one of the following: exercise tolerance test, nuclear study, echocardiography, or computed tomography.

Source: Dr. Slovis

## ECG Mistakes Never to Make

▶ Failure to get an ECG in chest pain patients.

▶ Failure to get an ECG in older patients with signs of syncope, presyncope, weakness, vomiting, nausea, diaphoresis, or shortness of breath.

▶ Failure to look specifically for all acute MI-ischemic patterns.

▶ Failure to repeat the ECG, especially if it is abnormal or is from a high-risk patient.

▶ Failure to compare new ECGs with previous ones—ask to have them faxed from other hospitals.

Source: Dr. Slovis

# NSAID Use After Acute MI Linked to Increased Mortality

BY BRUCE JANCIN  
Denver Bureau

DALLAS — The use of NSAIDs—whether cyclooxygenase-2-selective or not—in patients who've had an acute MI increases their risk of death, especially in higher doses, according to data from the Danish National Patient Registry.

To patients with ischemic heart disease, "I would say that you should try to avoid these drugs, but if you need to take them, use lower doses," Dr. Gunnar H. Gislason said at the annual scientific sessions of the American Heart Association.

The widely publicized prior studies that revealed the increased risks of MI and death associated with NSAID use—and that resulted in some COX-2-selective agents being taken off the market as well as an across-the-

board black box label warning for all NSAIDs—were based largely on patient populations with an average background cardiovascular risk. Dr. Gislason and his coinvestigators sought to learn whether the increased cardiovascular risk associated with NSAID use also applied to patients at very high cardiovascular



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risk: namely, those who've already had an MI. Funding for their study was provided by the Danish Heart Foundation.

Dr. Gislason reported on all 58,432 patients discharged from Danish hospitals following a first acute MI during 1995-2002. A

centralized national prescription database revealed that more than 40% of these first-MI survivors subsequently filled at least one prescription for an NSAID. Nearly 10% of all patients used a COX-2 inhibitor after having their MI.

The two most widely used, older, nonselective NSAIDs in Denmark are ibuprofen (used by 17.5% of the post-MI patients), and diclofenac (used by 10.6%). Rofecoxib was taken by 5.2% of the patients, whereas celecoxib was used by 4.3%.

The use of a COX-2 inhibitor in high doses—that is, more than 25 mg/day for rofecoxib or 200 mg of celecoxib—was associated with a four- to fivefold increased mortality risk during the time a patient was on the drug, compared with NSAID nonusers. Lower-dose therapy with a COX-2 inhibitor was associated with a lesser—albeit significantly increased—mortality risk. (See box.) The risk calculations were

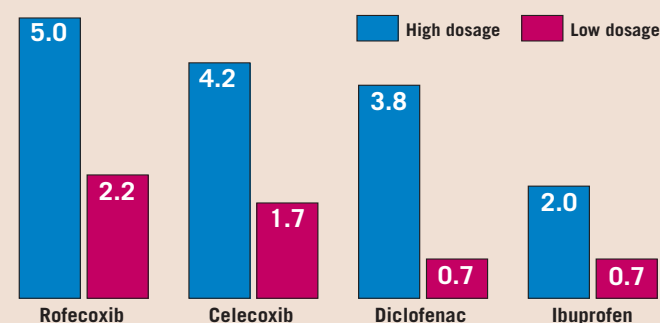
adjusted for comorbid illnesses, age, gender, and socioeconomic status, according to Dr. Gislason of Bispebjerg University Hospital, Copenhagen.

High-dose therapy with the nonselective NSAIDs was also associated with increased mortality risk.

The rate of out-of-hospital deaths was unusually high in the

NSAID users. The Danish investigators are still sorting out the causes using death certificate data. One possibility, as yet unconfirmed, is that NSAID users experienced an excess of arrhythmic deaths outside the hospital. In addition, hospitalization for heart failure following an MI was more common among users of COX-2 inhibitors. ■

## Adjusted Risk of Mortality of Post-MI Users of NSAIDs, Compared With Nonusers



Note: Based on all 58,432 patients discharged from Danish hospitals after their first acute MI during 1995-2002.  
Source: Dr. Gislason