

CARDIOLOGY

Renal Dysfunction and CAD: Noninvasive vs. Invasive Intervention

Even slight renal dysfunction is associated with a higher risk of subsequent cardiac events in patients with unstable coronary artery disease (CAD), say researchers from University Hospital, Uppsala, Sweden. On the bright side, though, they suggest that early invasive treatment for the unstable CAD can be managed without further compromise of these patients' renal function.

The researchers evaluated data on 2,457 patients with unstable CAD who had been assigned randomly to receive either noninvasive or early invasive treatment in the Fast Revascularization during InStability in Coronary artery disease (FRISC II) trial. The early invasive treatment had included coronary angiography and, if appropriate, revascularization within seven days of hospital admission. Patients in the noninvasive group had undergone coronary angiography only in the event of refractory or recurrent symptoms or severe ischemia. The trial also had randomly assigned patients from both treatment groups to receive either continuous treatment with subcutaneous dalteparin or placebo for three months.

The Swedish researchers stratified all of the patients into three groups based on their levels of creatinine clearance (CrCl), which investigators determined as the median of three CrCl measurements taken at hospital admission and at six-week and six-month follow-up. They then tracked patients' death and myocardial infarction (MI) rates for the next two years.

Of 842 patients with CrCl levels less than 69 mL/min, the rate of death

or MI was 22.4% for patients who had received noninvasive treatment and 14.6% for those who had received early invasive treatment. Of the 781 patients who had CrCl levels between 69 and 90 mL/min, 14.6% of those who had received noninvasive treatment died or had an MI versus 9.9% of those who had received early invasive treatment. No significant reduction in the death or MI rate was found between the noninvasive and early invasive treatment groups for the 831 patients with CrCl levels greater than 90 mL/min (11.6% versus 11.2%, respectively).

Based on their findings, the researchers conclude that reduced CrCl "may be a useful marker to identify patients with a higher mortality and larger risk of MI and thereby a greater potential to benefit from an early invasive strategy."

Source: *Am Heart J.* 2006;152:1052-1058.

INFECTIOUS DISEASE

Aspergillus in the ICU

Critically ill patients are at risk for opportunistic infections that usually are seen only in immunocompromised patients. This was the conclusion of researchers from the Detroit Medical Center (DMC), Detroit, MI who reviewed the medical records of 104 patients admitted to the DMC's medical, cardiac, and surgical intensive care units (ICUs). The researchers found that 75 (72%) of the patients had *Aspergillus* colonization and 29 (28%) of them were diagnosed with definite or probable invasive pulmonary aspergillosis (IPA).

While the *Aspergillus*-related mortality could not be determined with certainty (only 15% of patients were autopsied), the patients' mean Acute Physiologic and Chronic Health

Evaluation II score was 20.6 on ICU admission and their predicted mortality was 35.5%. Their actual mortality rate in the ICU, however, was 50%. These findings underscore the risks associated with *Aspergillus*, the researchers say.

Ten (34%) of the patients with definite or probable IPA did not demonstrate any of the classic IPA risk factors (including hematologic malignancy, neutropenia, immunosuppressive therapy, or bone marrow transplantation). Chronic obstructive pulmonary disease (COPD) was present in three of these 10 patients and was the only nonclassic risk factor found to have a statistically significant association with invasive IPA. Of the total number of patients with COPD (23), seven died while in the ICU—a higher mortality rate than that for patients with the classic IPA risk factors.

Among all the patients in the study, the average ICU stay was 15 days. The average interval between ICU admission and isolation of *Aspergillus* was 6.6 days, and most patients were found to have *Aspergillus* within the first week of admission. The researchers say that such short intervals suggest—in contrast to the findings of other studies—that patients' colonization and, perhaps, infection might not have been acquired in the ICU.

Using the risk factors found to be significantly associated with the development of invasive aspergillosis (hematologic malignancy, bone marrow transplantation, absolute neutropenia, immunosuppressive therapy, and broad-spectrum antibiotic therapy), the researchers developed a composite risk score. They found a cutoff of two risk factors to be 66% sensitive and 81% specific for predicting invasive disease. They say this risk score could help guide early antifungal therapy

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and might reduce the need for invasive diagnostic procedures in these patients.

Source: *J Crit Care*. 2006;21:322–327.

NEUROLOGY

Syncope in the General Population

Syncope accounts for as many as 5% of emergency department visits and 1% to 3% of hospital admissions. It can result not only in trauma but also in mounting health care costs due to recurrences. Still, syncope statistics are relatively limited, based on a few small studies in highly selected populations (such as specific age groups and military personnel). Therefore, focusing on syncope prevalence in an independently living community population, researchers from the Mayo Clinic, Rochester, MN conducted a cross-sectional survey of Minnesotans aged 45 or older living in Olmsted County.

The cohort was identified previously in order to study the prevalence of cardiac dysfunction and cardiovascular disease in adults. As such, survey participants answered questions regarding dyspnea, chest pain, and cardiovascular disease history, as well as questions related to syncope—including, “Have you ever experienced a blackout (fainting, complete loss of consciousness)?”

Overall, 364 (19%) of 1,925 participants reported experiencing an episode of syncope in their lifetime, with almost half (47%) of the 364 reporting at least one recurrent episode. Contrary to prior studies, the resulting data showed a lack of association between syncope prevalence and age. Prevalence rates according to age were 20% each for respondents aged 45 to 54 and aged 55 to 64, 15% for those aged 65 to 74, and 21% for those aged 75 or older. The prevalence rate was higher, however, for women compared to men (22% versus 15%).

The researchers describe the lack of association between syncope and age as “counterintuitive” and say that it may have resulted from an increase in mortality among elderly patients with syncope or underreporting by these patients, who may not recall a syncope episode that occurred many years ago.

One novel finding was that 21% of the cases of syncope reported may have been caused by injury, though the researchers say prior studies that reported high percentages of unexplained causes for syncope could have had traumatic causes mixed in. They suggest further study into syncope’s mortality risk with regard to age, as well as injury causing syncope.

Source: *Am J Med*. 2006;119:1088.e1–1088.e7.

EMERGENCY MEDICINE

Mismatched Cardio Markers

By now, it’s well known that cardiac biomarkers are important in the diagnosis and risk assessment of patients with acute coronary syndrome (ACS). But what do you do when the biomarkers don’t “match”? What if your patient has, say, normal creatine kinase (CK) levels but increased positive MB band of CK (CKMB) levels?

Researchers reporting on behalf of the Emergency Medicine Cardiac Research and Education Group evaluated data on 8,769 patients with chest pain admitted to seven academic and two community hospitals located in the United States and Singapore. Of those patients, 1,614 (18.4%) had positive findings of ACS. Patients were categorized as having: (1) increased CKMB and normal CK levels, (2) increased CKMB and increased CK levels, (3) normal CKMB and increased cardiac troponin levels, (4) increased CKMB and normal cardiac troponin levels, or (5) increased CKMB and increased cardiac troponin levels.

Increased levels of either cardiac troponin or CKMB appeared to raise the odds of ACS. Of 239 patients with increased CKMB and normal CK levels, 124 (52%) had ACS. Of 141 patients with normal CKMB and increased cardiac troponin, 58 (41%) had ACS.

Source: *Ann Emerg Med*. 2006;48:660–665.

PATIENT SAFETY

Pressure Problems

Medical personnel involved in the care of a critically ill patient prior to hospital admission need to focus more on ensuring that endotracheal tube cuffs have the right amount of pressure, according to a recent study.

Researchers from the University of Wisconsin, Madison retrospectively reviewed data on 62 patients who were intubated and transported to a hospital through a critical care aeromedical program. Intubations were performed prior to helicopter arrival by the program physician or ambulance personnel at the referring hospital. Endotracheal cuff pressure was measured by flight physicians on the helicopter just before takeoff, and corrections were made if the pressure fell outside the range of 20 to 30 cm H₂O.

Over half (58%) of the patients’ tube cuffs had pressure greater than 40 cm H₂O—enough to cause various ischemic changes and complications, as well as postoperative sore throat and nonischemic complications.

Although endotracheal tubes with a pressure-regulated cuff system are available, these tubes can be expensive. As an alternative, the researchers recommend frequent measurement and adjustment of tube cuff pressures—practices they describe as simple, inexpensive, requiring little time, and most amenable to the prehospital setting. ●

Source: *Am J Emerg Med*. 2007;25:53–56.