Clinical Digest

EMERGENCY MEDICINE

Predicting Sepsis Death Risk in the ED

Sepsis, which usually presents in the emergency department (ED), has an estimated mortality rate of 30% to 50%. It is important, therefore, for ED clinicians to identify patients with sepsis who are at a particularly high risk of death.

Heart rate variability (HRV) may be a very valuable tool in this regard, according to researchers from Cathay General Hospital, Fu Jen Catholic University School of Medicine, National Yang-Ming University School of Medicine, and Taipei Veterans General Hospital, all in Taipei, Taiwan. They reached this conclusion after studying 132 patients, aged 27 to 86 years, who reported to a medical center ED with sepsis between January and June 2006. The researchers used 10-minute electrocardiograms taken at the ED to analyze the patients' HRV measures, including standard deviation of normal-to-normal (SDNN) intervals, normalized high frequency power (HFP), total power (TP), very low frequency power (VLFP), low frequency power (LFP), and LFP/HFP. They also used patients' in-hospital data to categorize them as survivors—those who were discharged from the hospital in less than 28 days or who remained alive in the hospital for more than 28 days—or nonsurvivors of sepsis.

The results indicated that SDNN and normalized HFP were independent predictors of patients' in-hospital mortality, the researchers say. Their patient sample had 122 survivors and 10 nonsurvivors, and patients in the latter group had significantly lower SDNN and significantly higher normalized

HFP than patients in the former group. Patients who did not survive also had significantly lower TP, VLFP, LFP, LFP/HFP, systolic blood pressure, and scores on the Mortality in Emergency Department Sepsis scale—a scoring system that includes nine factors associated with mortality for patients in the ED with sepsis. Underlying disease (such as congestive heart failure or diabetes) and heart rate altering medications did not appear to have significant effects on patients' mortality.

These results, the researchers say, indicate that it could be beneficial to perform spectral HRV analyses on every patient with sepsis who visits the ED. They also point out, however, that this type of analysis is not useful in patients with respiratory failure or in those who have arrhythmia, non–sinus rhythm, and cardiac pacing.

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PAIN MANAGEMENT

Classifying Cancer Pain

Health care professionals don't always pay enough attention to the complexities of cancer pain, say researchers from University of Alberta and Grey Nuns Hospital, both in Edmonton, Alberta, Canada. Clinicians are not always taught that, when assessing such pain, they should look for factors that may complicate a pain management plan or indicate that pain control may be difficult to achieve. And studies do not always describe the details of cancer pain cases, which would be useful for comparing study results.

The researchers say that an internationally accepted classification system for cancer pain could help to solve

these problems. In the 1980s, investigators from their group developed the Edmonton Staging System (ESS), which used data on seven features of cancer pain (mechanisms of pain, incidental pain, daily opioid use, cognitive function, psychological distress, tolerance, and past history of alcoholism or drug addiction) to classify the pain and provide pain control prognoses of good, intermittent, or poor. Clinical experience, however, uncovered problems with implementing the system's pain tolerance calculation and with interpreting incidental pain, psychological distress, and addiction history. In addition, the ESS gave poor pain control prognoses to many patients who eventually achieved good pain control.

It was with these issues in mind that the researchers began work on a revision of the ESS called the Edmonton Classification System for Cancer Pain (ECS-CP). This work included a regional multicenter study, two secondary analyses of this study, and a construct validation study using expert panels. Unlike the ESS, the ECS-CP does not consider opioid doses (which the researchers considered more useful as an outcome measure) or pain tolerance. It provides new definitions for incidental pain (now called "incident pain" to better describe its transient and intermittent nature), psychological distress, addictive behavior, and cognitive function. And it includes an "unable to classify" option for each of the five features included.

At present, the researchers are conducting an international, multicenter, validation study that uses the ECS-CP with patients undergoing palliative care for their cancer pain. They also will consider incorporating a pain intensity feature into the ECS-CP, as one of their secondary analyses showed significant

associations between pain intensity at initial assessment and the length of time needed to achieve stable pain control.

DIABETES COMPLICATIONS

ACS in Women with Diabetes—Sparse Data, Atypical Presentation

Coronary heart disease (CHD) is the primary complication of diabetes, and both diabetes and female gender are risk factors for myocardial infarction (MI) without chest pain. Yet the body of research on type 2 diabetes in women—although growing—still includes very few data on acute coronary syndrome (ACS) symptoms, say investigators from Oregon Health & Science University, Portland.

They conducted an empirical, integrative literature review of research comparing ACS symptoms in men and women (specifically, white and Latina women) with and without diabetes—and identified only eight studies. Furthermore, only one of these studies reported a subgroup analysis of women with diabetes. And while one study included Latinas in its cohort, it did not break down the findings by gender or ethnicity. The prevalence of diabetes is up to four times higher in Latino men and women than in the white population, the researchers point out.

The researchers note that it is difficult to interpret symptoms (such as chest pain or shortness of breath) as having a cardiac origin in the context of diabetes. Similarly, abnormalities in blood glucose levels may confound symptom interpretation. None of the studies they reviewed reported data on blood glucose levels—a critical gap in reporting, they say, because an increased blood glucose level is an independent predictor of CHD mortality.

The researchers also point out that patients often do not seek treatment for ACS symptoms because they don't recognize them. Reports have shown that patients with diabetes delay care longer than those without diabetes and that women delay longer than men.

Still, their review of the research that does exist revealed a number of ways in which patients with diabetes may differ from others in presentation for ACS. The largest study, for example, found that diabetes is an independent predictor of "atypical" acute MI in women. Several other studies reported that patients with diabetes (of both genders) had less pain, including chest pain, compared to those without diabetes. One study found diabetes was an independent predictor of painless presentation of ACS—although analyses did not include women.

All told, the investigators conclude, the research to date suggests that shortness of breath may be an important symptom of ACS in women with diabetes. ●