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Study shows emergency physicians have good first instincts in diagnosing heart attacks

WINSTON-SALEM, N.C. – A study out of Wake Forest University Baptist Medical Center demonstrates emergency room doctors are correctly identifying patients who are having a heart attack, even when laboratory tests haven't yet confirmed it.

The study used data from a registry called i*trACS, and analyzed patients with heart attack symptoms who were admitted to emergency departments (EDs) in eight participating U.S. centers.

The findings were released today in the *Emergency Medicine Journal*.

"One of the most common complaints we see in the Emergency Department is chest pain," said Chadwick Miller, M.D., lead author and assistant professor of emergency medicine at Wake Forest Baptist. "That's why it is so important to figure out if we're doing a good job of diagnosing and treating heart attacks, or if there's a better way to do it."

The patients in the registry were divided into three groups: no myocardial infarction (No MI), non-ST segment elevation myocardial infarction (NSTEMI), or evolving myocardial infarction (EMI).

The groups were determined by a blood test that measured levels of the protein troponin, which increases when the heart muscle is damaged from a heart attack.

Patients classified as No MI may have had symptoms but, according to the troponin levels throughout their hospital stay, did not actually have a heart attack. Patients classified as NSTEMI showed elevated troponin levels when first admitted, usually because their heart attack happened several hours or even days before coming to the ED. Patients classified as EMI did not initially show elevated troponin levels when presenting to the ED, but showed evidence of heart damage up to 12 hours later.

The study focused primarily on EMI patients. When a patient was admitted into the ED with heart attack symptoms, doctors at centers participating in the i*trACS registry would record their initial impressions of the symptoms exhibited by the patient. According to the results, the initial impression of the physicians showed that a higher percentage of them assigned a higher risk of heart attack to the EMI (76 percent) and NSTEMI (71 percent) patients, than the No MI (52 percent) group. As a result, the EMI patients were triaged to higher levels of care than the no MI group, despite the initial negative troponin results.

"There has been a lot of concern that clinicians either aren't spending enough time getting clinical history from patients or are not using the information they obtain," said Miller. "Patients with EMI are at particular risk for being evaluated less aggressively because their initial troponin result is normal, even though they have had a heart attack. This study suggests that although we are relying on better medical technology to diagnose patients, the clinical impression is still very important."

"It is reassuring to see that the admission patterns among the EMI patients were more aggressive than with the No MI patients, even though in both groups the patients' troponin results were not elevated. This suggests that clinicians are not allowing the non-elevated troponin results to overshadow their clinical impression."

The i*trACS registry was compiled over a period of 26 months. More than 17,000 patients were enrolled. However, only 4,136 of those patients were included in the analysis, primarily because patients had to have two troponin results within 12 hours to be included. Patients were also excluded from the i*trACS registry if they were pregnant, or under 18 years old.

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Co-investigators were James Hoekstra, M.D., also of Wake Forest; Gregory Fermann, M.D., Christopher Lindsell, Ph.D., and Brian Gibler, M.D., all from University of Cincinnati; Kenneth Mahaffey, M.D., Duke Clinical Research Institute; Frank Peacock, M.D., Cleveland Clinic Foundation; Charles Pollack, M.A., M.D., and Judd Hollander, M.D., University of Pennsylvania; and Deborah B. Diercks, M.D., University of California, Davis Medical Center.

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Wake Forest University Baptist Medical Center (www.wfubmc.edu) is an academic health system comprised of North Carolina Baptist Hospital, Brenner Children's Hospital, Wake Forest University Physicians, and Wake Forest University Health Sciences, which operates the university's School of Medicine and Piedmont Triad Research Park. The system comprises 1,154 acute care, rehabilitation and long-term care beds and has been ranked as one of "America's Best Hospitals" by U.S. News & World Report since 1993. Wake Forest Baptist is ranked 32nd in the nation by America's Top Doctors for the number of its doctors considered best by their peers. The institution ranks in the top third in funding by the National Institutes of Health and fourth in the Southeast in revenues from its licensed intellectual property.