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Reduced range of facial expression indicates serious heart/lung disease

Inability to register surprise strongest indicator; can help prioritise care, say doctors
[Decreased facial expression variability in patients with serious cardiopulmonary disease in the emergency care setting Online First doi 10.1136/emermed-2014-203602]

A video abstract for this paper can be found at the following link: http://emj.bmj.com/content/early/2014/07/23/emermed-2014-203602.full

Patients with serious heart and lung conditions don't have the normal range of facial expressions, particularly the ability to register surprise in response to emotional cues, finds preliminary research published online in ***Emergency Medicine Journal***.

This finding could be used to help busy emergency care doctors decide whom to prioritise for treatment, and gauge who really needs often costly and invasive tests, suggest the researchers.

And it adds scientific credibility to the rapid visual assessment doctors make of how sick someone is, formally known as gestalt pretest probability, they say.

The researchers tested the diagnostic accuracy of reduced facial expression range in 50 adults with shortness of breath (dyspnoea) and chest pain in an emergency care department.

The patients briefly viewed three visual cues, designed to evoke an emotional response, on a laptop.

The computer webcam recorded their facial expressions in response to each of these cues, which included a humorous cartoon, a close-up of a surprised face, and a picture of someone in tears.

These recordings were analysed, using the Facial Action Coding System (FACS), which scores changes in facial muscle activity, reflecting the extent of smiling, frowning, and surprise.

The patients were scanned to check for serious heart or lung disease, including acute coronary syndrome (heart attack, unstable angina); a blood clot in the lung (pulmonary embolism); pneumonia; problems in the major (aortic) artery or gut; and new cancers, and monitored for 14 days.

During the monitoring period, eight (16%) patients developed serious heart or lung disease. Among the 42 considered not to have any serious health problem, two developed worsening chronic obstructive pulmonary disease, two developed heart failure; and one an irregular heart rhythm (atrial fibrillation).

The analysis of the webcam recordings showed that patients with chest pain and shortness of breath who had a potentially serious heart or lung condition had a significantly narrower range of facial expression in response to visual cues than those who did not have these health problems.

The difference in the ability to express surprise most strongly demarcated those with serious heart and lung problems from those without.

"We believe that due to the gravity of their illness, [these] patients may not have been able to process and respond to an emotional stimulus in the way that would be expected of most people under normal conditions," write the researchers.

They go on to say: "The ultimate goal of this work is to provide clinicians with a new physical finding that can be associated with a healthy state to avoid unnecessary [computed tomography] scanning," which could be added to the physical examination.

In an accompanying podcast, lead author Jeffrey Kline, says that there are several structured scoring systems to determine a patient's likelihood of developing a clot on the lungs, for example, but they are not always easy to remember or readily applicable to all patients.

And looking at patients is a key part of a doctor's bedside manner, he says, adding that as consultations by Skype become more common, the ability to read a patient's face may become even more important.