New technique helps determine degree of muscle wasting in critically ill patients

2 September 2012

Researchers have identified a new technique that can help determine the severity of muscle loss in critically ill patients. The breakthrough could lead to new research to help prevent muscle-wasting and new therapeutic interventions to help treat critically ill patients.

The results of the study will be presented today at the European Respiratory Society's Annual Congress in Vienna.

Patients who are critically ill with multi-organ failure often have significant muscle wasting after recovering from their illness. This can delay their discharge from an intensive care unit and is a major cause of disability affecting quality of life once patients have left the hospital.

Until now, there has been no clinically useful way of measuring muscle wastage, or identifying patients who are at a high-risk of this. The researchers hypothesised that they could measure the rectus femoris, one of the four quadriceps muscles in the leg, to determine the level of muscle wasting.

63 patients were recruited to the study within 24 hours of admission to hospital. Muscle wasting was assessed using an ultrasound to measure muscle circumference of the rectus femoris. Researchers also monitored the number of failed organ systems during the patient's time in intensive care, to assess which patients were at a high risk of muscle wasting.

The researchers determined that circumference measurements of the rectus femoris area by ultra sound can objectively track muscle loss early in critical illness. They also determined that the greatest reduction in muscle circumference was seen in patients with multi-organ failure. In patients with multi-organ failure, the circumference of the rectus femoris was reduced by approximately 21.53%. This compared with an approximate reduction of 7.2% in people with single organ failure.

Lead author, Dr Zudin Puthucheary from University College London, UK, said: "Our research has determined that measuring the rectus femoris using ultrasound is a useful tool to analyse the degree of muscle wasting in critically ill patients. This is clinically relevant as it can help healthcare professionals detect those at high-risk of muscle loss and provide interventions to help improve their quality of life. It is also an important discovery for research as it can help scientists track muscle response to different interventions, so we can find new solutions to addressing this problem in our critically ill patients."

Provided by European Lung Foundation