

Abstract

Introduction

Critical ill patients admitted to the ICU are at risk for development of severe diffuse weakness. Critical illness polyneuropathy (CIP) and myopathy (CIM) have a reported prevalence of up to 65% of critically ill patients, muscle wasting occurred early and rapidly during the first week of critical illness. The current standard for diagnosis of CIM & CIP in the ICU setting consists of muscle strength assessment, quantified using the Medical Research Council (MRC) scale together with nerve conduction studies and electromyography (EMG). It is important to diagnose ICU-AW early after onset of critical illness to initiate supportive interventions, such as early rehabilitation, which may improve functional outcome. Accordingly, there is a pressing need for easily applicable and non-invasive instruments for evaluation of muscle state in critically ill patients.

Methods

A total of 20 critical ill patients with SOFA score > 3 points were screened for eligibility and followed up during their ICU stay. We collected each patient's baseline characteristics, including the Acute Physiology and Chronic Health Evaluation II (APACHE II) and Sequential Organ Failure Assessment (SOFA), **The medical Research Council muscle strength (MRC) and Rankin scores.** Muscle echogenicity & fasciculations were examined by ultrasound on day 7 & 14. Also NCS were done on day 14. Furthermore, 20 healthy controls were also examined. They were subjected to full neurological examination and muscle ultrasound.

Results

The muscle echogenicity & fasciculations of patients increased in upper and lower limbs from day 7 to day 14 and were higher than controls with statistical significance. The muscle echogenicity on day 14 was the best diagnostic tool for neuromyopathy in critical ill patients at cutoff point 1.5 where AUC was 0.971, $p = 0.011$, sensitivity 94.1% and Specificity 100%.

Conclusion

The muscle echogenicity (day 7 & 14) and fasciculations (day 14) were a promising tool in the detection of muscle changes during course of critical illness.

Key words : Muscle ultrasound – Nerve conduction studies- critical illness
neuromyopathy