



## Abstract

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### Thickness of Rectus Abdominis Muscle Is Related to the Duration of Mechanical Ventilation and Mortality in Surgical Intensive Care Unit Patients

<sup>1</sup>Ming-chieh Yang

<sup>1</sup>Department of Critical Care Medicine, Kaohsiung Veterans General Hospital , Taiwan

#### **Objectives:**

To evaluate using ultrasound to measure the thickness of rectus abdominis muscle in determining the outcome of surgical intensive care unit patients

#### **Methods:**

Patients admitted to surgical intensive care unit (SICU) received measurement of thickness of the rectus abdominis muscle of upper abdomen. For patients staying in the ICU for more than 1 week, sequential ultrasound evaluation was carried out weekly. Other data, including patient characteristics, disease severity scores (APACHE II on admission to SICU, and SOFA score on the day of ultrasound evaluation), the duration of ventilation, and the length of stay in SICU, were recorded and analyzed.

#### **Results:**

During the 2-month studying period, 73 measurements of the thickness of rectus abdominis muscle were done in 41 patients. The majority of the patients received major abdominal surgery (20 patients) and surgery for head and neck cancer (10 patients). Only 4 patients were transferred to SICU owing to medical condition. The mean duration of mechanical ventilation and length of stay in ICU were 13.62 and 14.88 days, respectively. 10 patients finally failed to wean mechanical ventilation. SOFA score, BMI, and BMI to thickness of rectus abdominis muscle ratio, were significantly higher in patients failed weaning from mechanical ventilation. Kaplan-Meier analysis showed that higher BMI to thickness of rectus abdominis muscle ratio was associated with shorter survival time.

**Conclusions:**

Measuring the thickness of rectus abdominis muscle of ultrasound was easy to perform. SOFA score and BMI to thickness of rectus abdominis muscle ratio were related to failure of weaning from mechanical ventilation and mortality in SICU patients. Larger prospective study is required to further consolidate current findings.