

Category : **Outcome scores/prognostication**

A196 - Prospective ultrasonographic evaluation of femoral and vastus intermedius muscles as predictors of icu-acquired weakness in critically ill patients.

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Introduction:

Prediction of intensive care unit-acquired weakness (ICU-AW), a condition with worsening functional outcomes and increasing healthcare costs affecting ICU survivors, using muscular ultrasound (MUS) has been seldomly tested. This research assessed the diagnostic performance of changes in femoral cross-sectional area (Fcsa) and femoral + vastus intermedius thickness (F+VIth) for predicting the onset of ICU-AW.

Methods:

43 patients, surgical (n=25) and medical (n=18), underwent serial MUS measurements of Fcsa and F+VIth on days 1-5 after ICU admission. Patients with ICU-AW (MRC scale < 48 at ICU discharge) were compared to those without ICU-AW on the outcomes of mechanical ventilation (MV) days, ICU length of stay (ICU-LOS), extubation failure, need for tracheostomy, and ICU mortality. The predictive capacity of day 1 to day 5 measurements, as well as the proportional ($\Delta\%$) and absolute (ΔAbs) changes in the Fcsa and F+VIth indices for the development of ICU-AW, were assessed using the receiver operating capacity area under the curve (ROC-AUC curve).

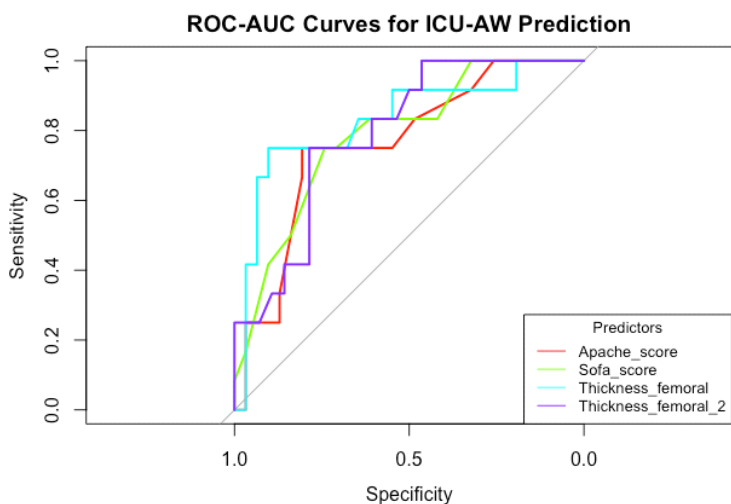
Results:

Patients who developed ICU-AW (n=12; 28%) exhibited a significant reduction in Fcsa ($p<0.001$) from Day 1 to Day 5. Both Day 1 Fcsa (ROC-AUC 0.72, sensibility 83%, specificity 67%) and F+VIth (ROC-AUC 0.82, specificity 90%) demonstrated moderate predictive capabilities for ICU-AW. Day 1 to Day 5 progressive changes in Fcsa ($\Delta\%$, ROC-AUC 0.75, specificity 93% and ΔAbs , ROC-AUC 0.7, sensibility 55%, specificity 88%) exhibited similar predictive potential. While ICU-AW patients had longer ICU-LOS, increased ventilator days, and higher extubation failure rates, no significant differences were observed in tracheostomy need or mortality.

Conclusion:

Early and progressive muscle loss of Fcsa and F+VIth detected by MUS was able to predict ICU-AW within 5 days after ICU admission, potentially enabling early identification of patients at risk for this debilitating condition and informing timely interventions to improve patient outcomes.

Image :



ROC-AUC for ICU_AW prediction