

Relation between Body Mass Index, Serum Albumin, Sofa Score, C-Reactive Protein and the Duration of Mechanical Ventilation

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Background

The prediction of duration of mechanical ventilation (MV) is difficult. Vital capacity, forced expiratory volume in one second (FEV1) and arterial oxygen pressure, before surgery can predict the duration of MV. For emergency intubation, respiratory parameters cannot be measured before the tracheal intubation. Prognostic factors such as nutritional depletion as assessed by body mass index (BMI) and serum albumin and overall systemic inflammation as estimated by C-reactive protein (CRP) appear to be major determinants of hospitalization.

Aims & Objectives

To determine the predictive ability of BMI, Sequential Organ Failure Assessment (SOFA score), serum albumin and CRP in assessing the duration of MV.

Material And Methods

Thirty patients aged >18 years who required MV were enrolled for the study. They were divided into 2 groups; patients who improved (Group 1), patients who expired (Group 2). Group 1 was further divided into two groups; patients on MV for <5 days (Group A), patients on MV for >5days (Group B). BMI and SOFA score were calculated and serum albumin and CRP were estimated.

Results

Out of the 30 patients, 18 patients successfully improved after MV (Group 1) and 12 patients expired (Group 2). Among the 18 patients in group 1, ten patients improved within 5 days (Group A) and 8 patients after 5 days (Group B). SOFA score and CRP were significantly increased (p-value 0.0003 and 0.0001 respectively) in group 2 when compared to group 1. However, BMI and serum albumin did not show any statistical difference in the two groups. In our study, CRP showed a significant relationship with the outcome of patient from MV. Also, patients who had a high SOFA score could not survive indicating that SOFA score can act as a good predictor of outcome from MV. The above parameters did not show any statistical difference when group A was compared to group B.

Conclusions

Simple, economic and easily accessible markers like CRP and assessment tools of critically ill patients with SOFA score are important determinants of possible outcomes of a patient from MV.