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# Impact of Hyperglycemia in the Outcome of Patients with Primary Neuromuscular Respiratory Failure.

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### Abstract

**BACKGROUND:** Hyperglycemia has been found to be associated with higher risk of ICU-acquired weakness. However, the impact of hyperglycemia on the outcome of patients with respiratory failure from a primary neuromuscular condition is not known.

**METHODS:** We reviewed 85 patients admitted to an ICU at Mayo Clinic (Rochester) with primary acute neuromuscular respiratory failure. Time of hyperglycemia (defined as >140 mg/dL and as >180 mg/dL) was calculated for each patient. Associations between hyperglycemic time, insulin administered, and outcome measures (duration of mechanical ventilation, in-hospital mortality, functional outcome at discharge, and at last follow-up) were evaluated using logistic regression analysis.

**RESULTS:** Although longer hyperglycemic time was associated with longer mechanical ventilation time and poorer short-term outcome on univariate analyses, these associations were no longer present when the analysis was adjusted for length of ICU stay. On this adjusted analysis, there were no significant associations between hyperglycemic time and duration of mechanical ventilation, in-hospital mortality, or functional outcome at discharge or at follow-up either for the entire cohort or for relevant subgroups (diabetics, non-diabetics, patients with neuropathy). The amount of insulin administered did not influence the outcome measures. Neither hyperglycemia nor the amount of insulin during the first 7 days of ICU admission was associated with any of the outcome measures.

**CONCLUSIONS:** In our cohort, we did not find evidence that the duration of hyperglycemia or the amount of insulin given had any major impact on the outcomes of patients with primary acute neuromuscular respiratory failure.

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