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Impact of non-invasive mechanical ventilation (niv) in critical patients with influenza (H1N1) PDM09

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Introduction

The use of non-invasive mechanical ventilation (NIV) in patients with influenza A (H1N1)pdm09 admitted to intensive care units (ICU) has been controversial.

Objectives

Our objective was to assess the incidence of failure in NIV in this group of patients and their impact on ICU mortality rate.

Methods

Secondary analysis of prospective observational multicentric study in 148 spanish ICUs. Data was obtained of GTEI / SEMICYUC (2009-2014) registry. All patients with Influenza Virus A (H1N1) confirmed with rt-PCR were included. Ventilatory strategy, demographics and hemodynamic data, comorbidities and severity indexes were evaluated and they were correlated with mortality. Chi-square (categorical variables) and "t" test or Mann-Whitney test (continuous variables) analysis were performed. Significant variables in the univariate analysis were included in a multivariate model (conditional logistic regression). A "p" value less than 0.05 was considered significant.

Results

2.223 patients were included in the analysis with a mortality 21.1% (n = 470 patients). 1726 patients were ventilated (77.6%), 962 (55.7%) of them were initially intubated, and in 764 (44.3%) NIV was initiated. NIV failed in 464 (60.7%) while 300 patients were responders (39.3%). Patients who died presented: older age (53.5 [15.34] vs. 48.5[15.1], p = 0.000), predominantly male (65% vs. 35%, p = 0.000), higher APACHEII (21[8] vs.14 [6], p = 0.000) and SOFA (8[3] vs. 5[3], p = 0.000), more shock (79% vs. 44%, p < 0.000), more acute renal failure (49% vs. 18%, p = 0.000), more comorbidities (asthma, heart failure, renal failure and immunosuppression, p < 0.001), more days of mechanical ventilation (12.9[13.4]vs.9.4[13.2], p = 0.000) and longer hospital stay (23.2[19.3]vs. 16.6[15.6]p = 0.000). NIV failed group patients, had higher mortality (36%) than NIV successful group (4%, p = 0.000) and initially intubated group (31%, p = 0.07). Furthermore, the failure of NIV (OR=10.2, 95%IC 5.28-19.76, p = 0.000), the APACHEII (OR=1,05, 95%IC 1.02-1.09, p = 0.004), acute renal failure (OR=2.48, 95% IC 1.52-4.05, p = 0.000) and immunodeficiency (OR=5.66, 95%IC 3.02-10.60, p = 0.000) were independently variables associated with mortality in the multivariate analysis.

Conclusions

In our population of patients with influenza A (H1N1) pdm09, the failure of NVI is frequently and is associate independently with the ICU mortality.

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