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Title: Predictors of failure of noninvasive ventilation in acute cardiogenic pulmonary edema

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Body: Noninvasive ventilation (NIV) appears to be benefit in the immediate treatment of acute cardiogenic pulmonary edema (ACPE) as an adjunct to pharmacological therapy. Aims: Evaluate efficacy and identify predictors of failure of NIV, defined as need of intubation or death during hospitalization, in acute cardiogenic pulmonary edema. Methods: Observational study. Analyzed clinical and arterial blood gas data of 105 episodes of NIV with Philips Respironics® V60. Results: Included 100 patients, 51% male, mean age 76.2Y (± 10.2). Co-morbid conditions present in 53% of success and in 68% of failure group. In most patients NIMV was started simultaneously with standard pharmacological therapy. NIV success in 75.2% (group 1) and failure in 24.8% (group 2). Mean pretreatment pH in success group 7,283 (minimum pH 7,01) vs 7,248 in failure group ($p > 0,05$). Initial PaO₂/FiO₂ ratio was significantly lower in failure group ($229,2 \pm 68,6$ vs $189,6 \pm 64,8$, $p < 0,05$). There was no significant difference in age, baseline NT-proBNP, pH level and PaCO₂ between failure and success group. Initial vital signs were also not significantly different between groups. Two hours after starting NIV pH level was significantly lower in failure group ($7,32 \pm 68,6$ vs $189,6 \pm 64,8$, $p < 0,05$) but there was no significant difference in PaCO₂, PaO₂/FiO₂ ratio and vital signs. Mean time of NIV was $4,5 \pm 5,1$ days. The average hospital stay was $14,7 \pm 15,8$ days. One patient underwent invasive mechanical ventilation and the overall mortality was 23,8%. Conclusions: Inicial PaO₂/FiO₂ and inadequate response in pH after two hours of NIV are factors associated with NIV failure. NIV has been applied successfully in ACPE with critical values of pH and hypercapnia.