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Are older patients at increased risk for hospital and long term mortality after prolonged mechanical ventilation?

L Piquilloud [1], M Gabriel [2], L Seravalli [1], G Besch [1], P Jolliet [1], J-P Revelly [1]

[1]Adult Intensive Care and Burn Unit, University Hospital of Lausanne, Lausanne, Switzerland

[2]Faculty of Biology and Medicine, University of Lausanne, Lausanne, Switzerland

Context

In acutely ill patients, both advanced age and prolonged invasive mechanical ventilation (PIMV) are independent predictors of mortality. However, the potential additive effect of age and PIMV is poorly known.

Aims

The aims of this study were to assess, in a Swiss medico-surgical ICU, the relationships between advanced age, PIMV and mortality and to assess whether advanced age and PIMV had a cumulative effect on mortality.

Methods

Retrospective analysis of the clinical characteristics (CA) and outcomes (ICU, hospital, one and 2-year mortality) of all adult patients residing in the Canton de Vaud admitted to our ICU and invasively ventilated between 2005 and 2010. Data from the clinical information system and the data warehouse and mortality from the state register were used for the analyses. Old age was defined as ≥ 70 yrs and PIMV as ≥ 7 days. Relationships between CA and outcomes were assessed by Chi2 and Wilcoxon tests as appropriate. Potential interaction between the statistical effect of age and PIMV on mortality was tested by logistic regression. p-value < 0.05 .

Results

5'165 patients were included in the study. Median age: 65.4 [53.4-74.9] years. ICU and hospital mortality: 16.9% & 21.2%. One and 2-year mortality: 31.4% & 38.4%. 38.4% of the patients were older than 70 yrs. They stayed longer in the hospital (15.2 [9.4-27.4] vs 13.3 [8.0-25.9] days) but not in the ICU. Their ICU and hospital mortality were 19.6% & 26.2%, higher than for patients < 70 yrs (15.2 % & 18.0 %). One & two year mortality was also higher for older patients: 39.9% & 47.3% vs 26.2% & 32.8%. 14.2% of the patients received PIMV (length of ventilation 10.6 [8.1-14.3] days), 27.6% of whom (n =202) were more than 70 yrs. Compared to patients not receiving PIMV, PIMV patients stayed longer in the ICU (17.5 [12.6-25.2] vs 2.2 [1.1-4.9] days) and in the hospital 33.8 [21.7-55.1 vs 12.7 [6.9-21.9] days). ICU and hospital mortality was higher in patients receiving PIMV than in those not receiving PIMV (20.3% & 28.7% vs 16.4% & 19.9%), as were one and 2-year mortalities (42.6% & 51.1% vs. 29.6% & 36.4%). No statistical interaction was found between the effect of age and PIMV on mortality.

Conclusions

Our findings confirm the independent effect of age and PIMV on mortality. There was statistically no cumulative effect of age and PIMV on ICU, hospital, one and 2-year mortality.