

The association of troponin testing with outcome in patients with oxygen supply/demand imbalance in emergency departments

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Background: Oxygen supply/demand imbalance is known as a risk condition for mortality in patients with elevated troponin, either due to type 2 myocardial infarction or myocardial injury. However, no data are available concerning the whole population at risk, including negative troponin cases. We aimed to compare the outcomes and evaluate the associated factors in a population of patients admitted in emergency departments with at least one condition of oxygen supply/demand imbalance, regardless of the troponin result or restrictive criteria for type 2 myocardial infarction.

Methods: A retrospective cohort of patients admitted in 2 emergency departments and having undergone a troponin assay over a five-month period constituted on the medical records, with a 3-years follow-up when available, with all-cause mortality, cardiovascular mortality, and major adverse cardiovascular events.

Results: In the 746 patients included, those with an elevated troponin (54.3%) had a poorer outcome concerning in-hospital mortality (21.1% versus 8.5%) and, within the follow-up period, major adverse cardiovascular events (37% versus 23.9%), particularly re-admission for acute heart failure, but not mortality. Factors associated with both in-hospital and follow-up mortality were age (odds ratio 2.63; 95% confidence interval 1.48-4.82 and 2.28; 95% confidence interval 1.47-3.59 respectively) and patient severity at admission (hypotension for in-hospital mortality odds ratio 2.66; 95% confidence interval 1.26-5.54 and hypoxia for follow-up odds ratio 1.81; 95% confidence interval 1.15-2.86). The onset of major adverse cardiovascular events after discharge was associated with age, some known cardiovascular diseases and presence of type 2 myocardial infarction criteria at admission (odds ratio 1.73; 95% confidence-interval 1.06-2.81).

Conclusion: Patients presenting with oxygen supply/demand imbalance and elevated troponin are at higher risk of in-hospital mortality, and both groups have significant subsequent major adverse cardiovascular events but only re-admission for acute heart failure was more prevalent when troponin was positive.