

Air or Ground To The Critical Care Resuscitation Unit: Outcome From A Propensity Matching Study

Background:

Critically ill patients are usually transported to tertiary care centers due to distance and need of urgent interventions. The financial cost for air transport (ART) is much higher, although patients' outcomes are still comparable to ground transport (GRT) in some medical conditions. We aimed to investigate whether air transport would be associated with mortality for patients being transferred to a Resuscitation Unit for urgent interventions.

Method:

We retrospectively assessed all adult patients who were transferred to the Critical Care Resuscitation Unit (CCRU) in 2018. Outcomes were hospital mortality, urgent surgical interventions within 12 hours of arrival. We used multivariable logistic regressions with 17 independent variables to calculate propensity score of each patient' need for air transport. We first performed greedy 1:2 matching then multivariable logistic regressions to measure association of independent variables with mortality.

Results:

We matched 205 ART to 410 GRT patients. Both ART and GRT groups had similar characteristics: age 59 (+/- 16) vs 58 (+/- 17) years, SOFA score of 5 [IQR 2-9] vs. 4 [2-8]; lactate 2.6 (+/- 0.1) vs. 3.0 (+/- 0.2). Hospital stay, and mortality was similar in ART (9.9 [5-19] days, 43 (21%) dead) vs. GRT (9 [5-18] days, 86 (21%) dead, $P>0.05$), respectively. ART patients arrived at the CCRU in shorter time (125 [100-173] vs. 194 [130-306] minutes, $P<0.001$) and more likely (67 patients, 33%) to undergo urgent operation than GRT (72 patients, 18%, $P<0.001$). High SOFA score (OR 1.2, 95%CI 1.1-1.3), high serum lactate (OR 1.1, 95%CI 1.03-1.2) was associated with higher mortality. Having SOFA score reduction in the CCRU (OR 0.5, 95%CI 0.3-0.90), was associated with lower hospital mortality, but transported by Air (OR 0.79, 95%CI 0.4-1.3) was not.

Conclusion:

Patients who were transferred to the CCRU by air was more likely to arrive faster and undergo urgent surgical operations. Patients transported by air had similar length of stay and mortality as those transported by ground. Only effective resuscitation, via reducing SOFA score during CCRU stay, was associated with lower mortality. Further studies are necessary to confirm our observations.