Trends and Predictors of Mortality in Heart Transplant Patients with Respiratory Failure Requiring Mechanical Ventilation

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Rationale: Sold organ transplant like heart transplant carries higher risk of respiratory infections and respiratory failure due to immunosuppression. The purpose of this study was to identify trends of mortality over last 12 years in heart transplant patients using hospital admission data from National inpatient sample (NIS). Methods: Heart transplant patients with respiratory failure patients requiring mechanical ventilation were identified from NIS data from January 2002 to December 2014 using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. Different co morbidities and associated conditions were calculated as binary variables using ICD-9 codes. Pearson’s test was used for categorical variables and independent samples t-test for continuous variables. A P value of <0.05 was considered significant. Multiple logistic regression analysis was used to predict variables for inpatient mortality. Results: 1000 patients with heart transplant had respiratory failure requiring mechanical ventilation. 26.1% (261) were females. Mean age was 55.74 (SD [19.07]) yrs. 30.6% (306) patients died. 13.9% (139) had bacterial pneumonia, 2.2% (22) had streptococcus, 4.9% (49) had staph aureus, 5.2% (52) had gram negative septicemia, 2.7% (27) cytomegalovirus pneumonia, 2.5% (25) had influenza/parainfluenza, 5.2% (52) had fungal pneumonia and 23.8% (238) had pneumonia of unspecified cause. 23.8% (238) had septic shock. Mortality over years is shown in figure 1. Multiple regression showed higher odds of mortality with age (OR, 1.02 [95% CI; 1.009-1.032] P<0.01), septic shock (OR, 2.087 [95% CI; 1.447-3.009] P<0.01), lymphoma (OR, 5.376 [95% CI; 1.133-25.503] P=.03), metastatic cancer (OR, 3.442 [95% CI; 1.25-9.482] P=0.01) and fungal pneumonia (OR, 2.19 [95% CI; 1.105-4.34] P=0.03). Conclusion: Mortality in transplant patient has down trended over the years. Septic shock, fungal pneumonia and malignancies are associated with increase mortality in this patient population. Further investigations are needed to identify causation and decrease mortality and morbidity in this population.
Figure 1. Mortality in Heart transplant patients with respiratory failure requiring mechanical ventilation

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