The Use of Charlson Comorbidity Index for Patients Receiving Inhospital Unexpected Resuscitation by a Cardiac Arrest Team: Clinical Outcome and Implications

Fu-Cheng Chen, Chih-Min Su, Chao-Jui Li, Wen-Huei Le, Chia-Te Kung

Department of Emergency Medicine, Chang Gung Memorial Hospital-Kaohsiung Medical Center, Chang Gung University College of Medicine, Kaohsiung, Taiwan

ABSTRACT

Objective: To validate the use of the Charlson Comorbidity Index (CCI) for predicting the outcome in patients receiving cardiopulmonary resuscitation (CPR) in a hospital environment.

Methods: We retrospectively reviewed medical and nursing records of all adult inpatients having unexpected resuscitation at our hospital from December 2002 to December 2005. We collect the patient's data according to the in-hospital Utstein style if possible. Each patient was scaled on the Charlson Comorbidity Index (CCI). We analyzed the influence of the patients and the event variables on the outcomes in terms of survival to discharge and return of spontaneous circulation.

Results: A total of 72 patients were analyzed for event variables and resuscitation results. The mean age was 60.7 years and 65.3% of the patients were men. The location of the resuscitation events was mostly in the general wards (86.1%), and in the diagnostic area (9.7%). The most common precipitating causes of resuscitation were acute respiratory insufficiency (81.9%), hypotension/hypoperfusion (31.9%), arrhythmia (16.7%), and airway obstruction (16.7%). The rate of successful ROSC was 54.8%, and the rate of survival to discharge was 26.4%. Gender, age, initial rhythm and defibrillation did not significantly influence the outcome in terms of survival to discharge and whether ROSC was achieved. The CCI was the only factor that was significantly associated with death (p<0.001). Among the total of 72 enrolled patients, those who had a higher CCI weighting were at an elevated risk of death compared to the patients who had a lower CCI weighting. The mortality rates for the individual groups were 21% (4 out of 19) for a CCI between 0-3, 85% (24 out of 28) for a CCI between 4 and 6 and 100% (25 out of 25) for a CCI >6.

Conclusion: The CCI provides a good measure of comorbid condition severity and correlates well with in-hospital mortality among patients receiving CPR following a cardiopulmonary arrest in the hospital environment. High comorbidity (CCI ≥4) patients had an exceptionally high mortality rate (>85%).

Keywords: cardiopulmonary resuscitation; Charlson Comorbidity Index; outcome