

Background

To date, no consensus exists on the effects of steroid use on pneumonic chronic obstructive pulmonary disease (COPD) owing to trial design issues in previous trials involving these conditions. Therefore, we aimed to evaluate steroid effectiveness in pneumonic COPD exacerbation patients.

Methods

This multi-centred, retrospective, observational study was conducted across five acute general hospitals in Japan. We analysed the association between parenteral/oral steroid therapy and time to clinical stability in pneumonic COPD exacerbation.

We used a validated algorithm derived from the 10th revision of the International Classification of Diseases and Related Health Problems (ICD-10) to include pneumonic COPD exacerbation patients. We excluded patients with other hypoxia causes (asthma exacerbation, pneumothorax, heart failure) and complicated pneumonia (obstructive pneumonia, empyema), those who required tracheal intubation/vasopressors, and those who were clinically stable on the admission day.

The primary outcome was time to clinical stability. Multiple imputation was used for missing data. Propensity scores within each imputed dataset were calculated using potential confounding factors. The Fine and Gray model was used within each dataset to account for the competing risk of death and hospital discharge without clinical stability, and we combined the results.

Results

Altogether, 1237 patients were included. The pooled estimated subdistribution hazard ratio of time to clinical stability in steroid versus non-steroid users was 0.89 (95% confidence interval, 0.78 to 1.03). However, there were potentially unmeasured confounders, and we could not assess longer-term outcomes.

Conclusions

The current study recommends that steroid therapy should not be used routinely for pneumonic COPD exacerbation.

variables' information

id: anonymized patients' ID, age: patients' age on hospitalization, gender: 1=male, 2=female, steroid: steroid use (0=not, 1=steroid use), hospital: categorized hospital name (1=Kameda Medical Center, 2=Awa Regional, 3=Hyogo Prefectural Amagasaki General Medical Center, 4=Saiseikai Yokohamashi Tobu Hospital, 5=Ichinomiyanishi hospital), adl: activity daily living before hospitalization (0: full support, 1: not full support), wheeze: wheezing lung sound on admission (0:not, 1:wheezing lung sound), bun: blood urea nitrogen (mg/dL), rr: respiratory rate (/minute), ams: altered mental status (0=not, 1=altered mental status), hr: heart rate (/minute), hot: home oxygen therapy use before hospitalization (0=not, 1=users), insulin: new insuline users during hospitalization (0=not, 1=new users), delirium: clinical diagnosis of delirium during hospitalization (0=not, 1=delirium), stability: reaching the clinical stability (0=not, 1=reached clinical stability), time_to_stability: time to clinical stability (days), death: in-hospital death, non-informative_censoring: non-informative censoring (0=not, 1=non-informative censoring), discharge (0=not, 1=discharged patients), intubation: tracheal intubation during hospitalization (0=not, 1=intubated), hospitalization=length of stay (days)