

Assessment of severity scores in community-acquired pneumonia for adult patients- A cross-sectional study

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Abstract

Background: Current research was carried out to evaluate the severity score such as PSI, SMART-COP and CURB-65 for the capability to forecast the requirement for mechanical ventilation and inotropic support for adult patients.

Materials and Methods: Current observational research was carried out in subjects admit with CAP. The evaluation utensils utilized were the CURB-65 score, PSI, and the SMART-COP scores, particularly planned to forecast the necessity for intensive respiratory and vasopressor support. In general result with CAP was too evaluated.

Results: Statically significant was observed in sensitivity and specificity for CURB-65 scores in mechanical ventilation and inotropic support. Fifty nine participants have been mandatory required mechanical ventilation and 41 preferred inotropic supports during their hospital stay.

Conclusions: CURB 65 and PSI scores, even if extensively utilized for forecasting death in big inhabitants, they are not as much of precise for forecasting results.

Keywords: Community-acquired pneumonia; Cross-sectional study; Sensitivity; Specificity.

Introduction

Infection of lung parenchyma is called as pneumonia. CAP fluctuates from the pneumonia that is obtain in hospital, so that's why called as hospital acquired pneumonia[1-3]. The main causative organism for CAP is bacteria and they have been classified as atypical and typical pneumonia. The main causative organism are staphylococcus aureus, haemophilus influenza and streptococcus pneumonia. Other atypical causative pathogens like Mycoplasma pneumonia, Chlamydia species are in frequently recognized as we require special lab analysis for their identification and diagnosis[4,5].

The clinical features CAP are cough, sputum, dyspnea, rigors, chills and chest discomfort. However in many cases some of the patients do satisfy the above present criteria but instead of pneumonia they might have acute bronchitis. Due to inability of differentiation from bronchitis and pneumonia there is the over use of the antibiotics. Many times in the patient analyzed with CAP, there may be present with fever without localizing features that may add to the mortality and morbidity in the adult patients. The treatment regimens for the CAP depend on the assessment of the strictness of the illness. Either to treat with antibiotic regime or requires hospitalization for further treatment depends on the severity of diseases. To avoid such situation there are development of the prediction rules that helps in assisting the treatment protocol. The forecast regulates that are most frequently utilized are pneumonia confusion, severity index, age more than 65 years, respiratory rate, tachycardia, vasopressor support and requirement of ventilator. Therefore, current research was carrying out to evaluate the score such as

PSI, SMART-COP and CURB-65 for adult patients indoor in hospital with CAP.

Materials and Methods

The present study was conducted at the Department of Respiratory Medicine, Gujarat Adani Institute of Medical Science, Bhuj, Kutch on indoor patients identified with CAP. Prior to the conduction of the study, the review board of the medical centres were informed and ethical approval was taken from them. The informed consent was taken from all the participants who were willing to participate in the study. The inclusion criteria are as follows: present and development of more than 3 symptoms. Symptoms include dyspnea, chest pain, fever, headache, hemoptysis and presence of productive cough. The exclusion criteria were the presence of hospital acquired pneumonia, immunocompromised persons and active thoracic malignancy. A proforma was arranged and finished during hospital admittance. Patient's vital and standard blood tests were analyzed. Requirement for mechanical ventilation and/or inotropic support were utilized to estimate the requirement of intensive respiratory, vasopressor support and to assess mortality for adult patients admitted with CAP. In general result of patients with CAP was too evaluated.

Statistical analysis

Microsoft excel spreadsheet was use for data collection and coding. SPSS version 15 was utilized to do the analysis. The variables were assessed for normality using the Kolmogorov-Smirnov test. Descriptive statistics were calculated.

Results

There were 59% were male and 41% female in the study population with renal and congestive heart disease were key co-morbidities. The sensitivity and specificity for CURB-65 were significantly higher in

Class 2 [Table 2a and b]. Fifty nine patients required mechanical during their hospital stay. It was shown that SMART-COP is an improved forecasting utensil contrast to CURB-65 and PSI in predicting mechanical ventilation and inotropic support.

Table 1: The comorbidities in patients admitted with community acquired pneumonia

Diseases	Number of patients
Neoplastic disease	1
Cerebrovascular disease	7
Chronic liver disease	20
Congestive cardiac failure	24
Chronic renal disease	12

Table 2a: Variables for various classes of CURB-65 scoring system for predicting mechanical ventilation

CURB- 65 class	Sensitivity (%)	Specificity (%)	NPV (%)	PPV (%)
2	85.7	47.5	9.7	63.3
3	95.2	27.1	5.9	683.

Table 2b: Variables for various classes of CURB-65 scoring system for predicting inotropic support

CURB- 65 class	Sensitivity (%)	Specificity (%)	NPV (%)	PPV (%)
2	85.4	64.1	19.4	28.6
3	100	20.3	5.9	36.5

Discussion

Evaluation of the strictness and precise diagnosis is necessary for the further decision making. Levels of the treatment and overall cost of the treatment signify it. As per the recommendation of British Thoracic Society CURB-65 is the valid method of predicting mortality in association with community acquired pneumonia[6]. Fine et al., has developed Pneumonia severity index score which includes twenty items[7]. The items include are five comorbid conditions, seven laboratory result, 5 physical examination findings and 3 demographic variables. For all item point were allocated. The total concluding score was completed and separated into five risk classes. Low risks appear beneath classes I – III which are controllable, and those who fell in class IV and class V have need of indoor facilities.

SMART-COP is necessary to evaluate the patient, that require rigorous respiratory support[8]. Mechanical ventilation got lesser significance in comparison to inotropic support as most of the patients had requirement of vasopressor support. Finding of the current research were analogous to Chalmers and Singanayagam[9]. In the present study CURB-65 and PSI similarly had low specificity and sensitivity which is analogous to study conducted by Shah et al.[10].

Conclusions

PSI and CURB 65 values are not as much of precise for forecasting of results advanced researches are obligatory in bigger community and patients which compares various prognostic tools obtainable.

Conflicts of interest: None declared.

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