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EDITORIAL COMMENT

Editorial Commentary: Community-acquired pneumonia, comparison of three mortality prediction scores in the emergency department

Comentario editorial: Neumonía adquirida en la comunidad, comparación de tres puntajes de predicción de mortalidad en el departamento de emergencias

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Successive measurements of global disease burden have documented that lower respiratory tract infections, including pneumonia, are among the top 10 causes disability adjusted life-years and in 2019 pneumonia was the fourth cause of mortality for all ages [1]. In Colombia, acute respiratory infections are the leading cause of mortality within the group of infectious diseases, 52.3% of the total reported between 2005 and 2019 [2]. Noteworthy, the COVID-19 epidemic increased the impact of respiratory tract infections on the global disease burden, with estimates of 18 million excess deaths during the period January 2020 to December 2021 worldwide [3].

The assessment of an adult with pneumonia or suspected pneumonia demands the identification of the likelihood of death and/or hospitalization. Several scales have been constructed to estimate this probability to improve the predictive capacity of clinical evaluation. Among these scales, the CRB-65 and the CURB-65 stand out; being the first one recommended for use with clinical criteria, and the second one when laboratory data such as urea nitrogen are available [4]. Additionally, for individual with sepsis there have been developed to predict mortality such as SOFA (Sequential Organ Failure Assessment) and more recently the qSOFA(quick SOFA) which has an accurate prediction of mortality in this population [5,6].

Hincapié C et al assessed the CURB-65, CRB-65 and SOFA scales to predict mortality and/or admission to the intensive care unit in adults with pneumonia in three cohorts of patients admitted in three medium- and high-complexity hospitals in the city of Medellin-Colombia [7]. The study included 1,110 patients with suspected pneumonia who were identified in the emergency department and followed up until discharge and/or death. The authors found that the highest discrimination capacity, measured by the ROC curve, for the outcome hospitalization in an intensive care unit was 0.61, 0.58 and 0.59 for the CURB-65, CRB-65 and SOFA, respectively. In relation to mortality, the ROC found was 0.66, 0.63, and 0.63 for CURB-65, CRB65, and SOFA, respectively. The calibration was appropriate, that is, the ability to predict mortality and admission to the intensive care unit e for the three scales. Some readers have expressed their disagreement with the possible limited use of the scales, particularly the CURB-65 and the CRB-65 in the evaluation of an adult patient with pneumonia expressed by the authors.

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The diagnosis of pneumonia both in the context of emergency care and in outpatient services is a challenge due to the heterogeneity of the clinical picture. The sensitivity of the clinical diagnosis has been reported between 45% and 69% [8-10]. Age, the immune status of the person, and the type of germ are the conditions most related to variability in clinical presentation [11]. Hincapié et al. [6], report that the diagnosis was based on the data obtained from the clinical records and their verification by the researchers. In this analysis, it would be useful to know the concordance between the diagnosis assigned by the researchers and the one established by the treating group, as well as the diagnostic capacity of the criteria used in the study[7]. A discrepancy in favor of a greater diagnostic capacity used by the researchers would suggest that the treating group did not identify the diagnosis early and therefore delays in the care received, such as the start of antibiotics. These delays would lead to a potentially greater probability of complications [12] and consequently leave in the sample a population composed mainly of people in the highest levels of severity, which could explain the low discriminative capacity of the scales found in the study.

In a complementary way, the validation of a score requires a sample that meets at least two characteristics: the occurrence of the outcome close to the real value and the representation of groups with different levels of risk within the cohort [13,14]. Hincapié et al. [6], found the mortality rate between 17% and 33% in the three cohorts [7]. This mortality is similar to that identified by Narvaéz P et al. [15], who found a mortality rate of 20% in patients hospitalized with pneumonia secondary to pneumococcus in the city of Bogotá but it is higher than that observed in the cohorts from which CURB-65 and CRB-65 were derived, 7% [4]. Again, this difference could indicate that the population included in the study would be mostly in the groups with the highest severity and therefore the small number of patients with low scores did not allow to assess correctly their discriminative capacity but it did allow for the calibration [4,16]. The authors could clarify this comment by sharing the distribution of the population included based on the categories established in the CURB-65 and CRB-65 scales.

The limited discriminatory capacity of the CURB-65 and CRB-65 scores has also been reported by other authors [16]. Aujesky et al. [14], found that the ability to identify patients at low risk of mortality was greater using the PSI (Pneumonia Severity Index) scale compared to the CURB-65. Consequently, the guideline for the diagnosis and treatment of reported acquired pneumonia prepared by the American Society of Infectious Diseases recommends the use of the PSI to guide managemen. However, the NICE (National Institute for Health and Care Excellence) guide of the United Kingdom continues to recommend the use of the CURB-65, which was derived from cohorts identified in the health services of that country [16]. This corroborate the well-known need to validate the performance of scales in each population when using them in populations different from which they were derived. The adequate representation of the entire spectrum of the disease in the sample studied, as well as the influence of the interventions, determines their utility for a particular population.

The study by Hincapié et al.[6], illustrates the variability in the predictive performance of the CURB-65 and CRB-65 scales and suggests the need to improve the early diagnosis of community-acquired pneumonia [7]. The potential limitation in the discriminative capacity of these scales could be clarified in a cohort assembled with a population treated at different levels of care in such a way that all the spectrum of the pneumonia condition can be included.

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