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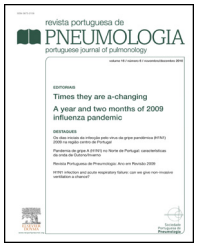

EDITORIAL

PSI, CURB-65, SMART-COP or SCAP? And the winner is... SMART DOCTORS

PSI, CURB-65, SMART-COP ou SCAP? E o vencedor é... SMART DOCTORS

Community-acquired pneumonia (CAP) is one of the most common diseases in adults with an estimated average annual incidence of 5 to 11 cases per 1000 inhabitants,[1] which increases significantly with age.[2] It is a major cause of hospital admission but the percentage of patients hospitalized for CAP varies greatly depending on country or region, the populations studied and the way the health systems are organised. In Portugal, it is estimated that 25 to 50% of adults with CAP are admitted to hospital[3] and, in the period from 2000 to 2009, CAP was one of the principle causes of hospitalization, representing 3,7% of total adult hospital admissions.[4]

Although the majority of patients are treated as outpatients, hospital admissions for treatment of patients with CAP represent a big percentage of the cost of treating CAP patients. Studies carried out in the United States of America (USA), at the end of the last century, worked out that the total annual cost was 8,4 billion US dollars, of which 8,0 billion (95%) was the result of hospital admission.[5] To deal with this, Michael Fine *et al* developed the first score for CAP, the *Pneumonia Severity Index* (PSI), with the goal of predicting mortality and identifying patients at low risk of mortality who did not need to be admitted to hospital.[6] The PSI stratifies patients into 5 risk classes, based on evaluation of more than twenty clinical and laboratory parameters, heavily weighted for age and comorbidities.[7] The complexity of the PSI, led to the development of another score, the CURB-65 (acronym for Confusion, Urea, Respiratory rate, Blood pressure and age $\geq$65) by the British Thoracic Society.[8]

Various studies have evaluated the PSI and the CURB-65 in the same populations with comparable results for predicting mortality and identifying low-risk patients, although in one study the CURB-65 had better results in predicting mortality in the most serious cases.[7]

It should be pointed out that neither the PSI nor the CURB-65 were developed to identify patients needing to be referred to the Intensive Care Units (ICU), although the CURB-65 does appear to be more precise than the PSI in predicting admission to ICU.[9]

In 2001, the American Thoracic Society (ATS) made the following recommendations for CAP in order to identify patients with serious pneumonia and predicted admission into ICU using major and minor criteria.[10] Severe CAP was defined by the presence of one of two major criteria (dependence on mechanical ventilation or septic shock) or 2 of three minor criteria (systolic blood pressure $\leq$90 mm Hg, multilobar involvement or PaO_2/FIO_2 $\leq$250).[10] In 2007, joint recommendations by the Infectious Diseases Society of America (IDSA) and the ATS[11] increased the minor criteria to nine, patients needing to meet at least 3 minor criteria to be defined as severe CAP; however, there were no gains in terms of sensitivity or specificity over the 2001 criteria.[12]

More recently, two new scores have emerged: the SMART-COP (acronym for Systolic blood pressure, Multilobar infiltrates, Albumin, Respiratory rate, Tachycardia, Confusion, Oxygen and pH) developed in Australia,[13] and SCAP (Severe CAP) developed in Spain,[14] which utilizes major criteria (pH and systolic blood pressure) and minor ones (confusion, urea, respiratory rate, multilobar infiltrates, oxygen and age $\geq$80). Although many of the parameters evaluated are common to all scores, these two new scores differ from the PSI and CURB-65 in that they do not present the same level of validation and their principle goal is identification of patients with severe pneumonia who need to be referred to ICU. In the actual PJP edition C. Ribeiro et al. compare these new scores with the two previous ones.[15]

All the existing scores have advantages and limitations. The main advantages are the prediction of risk of mortality and serious progressive complications, cutting down costs by reducing expensive hospital human resources on low-risk patients and in the early recognition of the most seriously ill patients so that they benefit from rapid referral to the ICU.[7]

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Another important advantage is the use of scores in clinical research.[7] In terms of limitations, the different scores vary in terms of levels of validation and accuracy, particularly among certain age groups, such as the oldest and the youngest. They do not properly take into account social factors and the degree of dependency which could affect the decision as to whether to admit to hospital and there is also the omission of important comorbidities like DPOC, immunosuppression and functional status. Very recently the Influenza A(H1N1) pandemic in 2009, provided the opportunity to check the lowest predictive value and usefulness of the different scores in patients with viral pneumonia.[16]

None of the current scores include acute phase inflammatory markers or biomarkers but preliminary data indicate that these, in particular procalcitonin, could improve the score risk stratification and thus increase their usefulness.[7]

In conclusion, these scores are useful tools but they cannot nor should they substitute medical evaluation and clinical reasoning. Ideally, the best strategic approach to CAP will always depend on experienced doctors (SMART-DOCTORS) who can apply their knowledge to the complexity and specific characteristics of the individual patients and can use the scores as supplementary information to make appropriate decisions for the population in question.

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