



Editorial

Duration of Antibiotic Treatment in Community-Acquired Pneumonia[☆]

Duración del tratamiento antibiótico en la neumonía adquirida en la comunidad

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The optimal duration of antibiotic treatment in community-acquired pneumonia (CAP) has not been completely established, and there are discrepancies even between various clinical guidelines published to date. The *British Thoracic Society*¹ recommends 7 days of antibiotic treatment in patients with uncomplicated mild to moderate CAP. In 2011, the *ERS*² published guidelines recommending that treatment should not exceed 8 days in responding patients defined by clinical stability criteria. However, as far back as 2007, the *IDSA/ATS*³ recommended a minimum treatment of 5 days, providing that the patient remained afebrile for 48–72 h, with no more than 1 sign of clinical instability.

Efforts to cut back on widespread antibiotic use have been associated with multiple benefits, such as a decrease in microbial resistance, fewer adverse effects, and improved treatment adherence. The use of low-dose and long-duration (>5 days) beta-lactams is associated with an increase in pharyngeal carriage of penicillin-resistant *Streptococcus pneumoniae*.⁴ Despite this, reducing the duration of antibiotic treatment in CAP can be complicated in routine clinical practice.

In this respect, Moussaoui et al.⁵ conducted a clinical trial in 186 patients with CAP and a pneumonia severity score (PSI) of less than 110 points, who were given amoxicillin. In patients who presented an initial improvement after 72 h, 3 days of amoxicillin was equivalent to continuing the treatment for 8 days. Clinical cure was achieved after 10 days in 93% of cases in both groups.

In view of the concentration-dependent bactericidal activity and prolonged post-antibiotic effect of quinolones, it is logical to presume that by increasing the dose, and therefore the peak concentration and area under the curve, the duration of antibiotic treatment can be reduced without affecting efficacy. Dunbar et al.⁶ compared a 5-day course of levofloxacin 750 mg versus a 10-day course of 500 mg of the same antibiotic in patients with CAP PSI I–IV. He found that both were at least equally effective, and that fever was resolved earlier in the first group.

Macrolides are known to have a long half-life and excellent lung penetration, which undoubtedly facilitates their use in short

regimens. Some authors have even compared single-dose 2-g microsphere formulation regimens versus 7-day levofloxacin doses of 500 mg, with similar clinical cure rates.⁷

A recent meta-analysis compared short (<7 days) vs longer (>7 days) treatments in patients with mild-moderate CAP, confirming the non-inferiority of the former in terms of clinical cure, mortality, bacteriological cure and adverse effects.⁹ However, all studies to date, with the exception of CURB65 3–5 conducted by Choudhury et al.,⁸ have evaluated patients with mild and moderate CAP. CURB65 3–5 was a prospective, observational study in which the authors developed a propensity score to divide patients with initial clinical improvement into 2 groups: those receiving antibiotics for 7 days vs more than 7 days. The 30-day mortality, need for mechanical ventilation, and complications were similar in both groups, with no significant differences observed. Furthermore, on performing a multivariate analysis, they observed that factors such as age, earlier time to clinical stability and a lower CURB65 score at admission, were significantly associated with shorter duration of antibiotic treatment. In contrast, multilobar involvement was associated with longer duration.

The resolution of fever and clinical improvement in general are undoubtedly important markers for choosing the duration of antibiotic treatment. However, clinical criteria are subject to intra-professional variability. For this reason, biomarkers of systemic inflammation have been evaluated as a guideline for the duration of antibiotic treatment. Various studies have shown procalcitonin (PCT), a prohormone of calcitonin, to be very useful for developing algorithms that can determine the duration of treatment.

The ProHOSP¹⁰ study, despite including subjects with lower respiratory tract infections that could increase the viral etiology, found a reduction of up to 3 days in the PCT algorithm group, with no increase in complications. A recent meta-analysis published by Schuetz et al.¹¹ evaluating the impact of PCT on reducing the duration of antibiotic treatment in patients with lower respiratory tract infection, found no differences in mortality or therapeutic failure. Similarly, an analysis of the subgroup of patients with CAP showed that antibiotic treatment in the group following PCT-based guidelines was reduced by 3.34 days, with no increase in mortality or therapeutic failure.

In conclusion, the duration of antibiotic treatment in most patients with CAP and initial improvement can be safely reduced.

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However, there are still some aspects to be clarified. First, the pharmacodynamic differences between antibiotics makes it difficult to standardize duration criteria. Secondly, most studies have focused on mild to moderate CAP, and therefore more clinical trials are required to evaluate the results in elderly patients and those with severe CAP. In the words of a well-known British author, “Time is a drug. Too much of it kills you”. We often prescribe 10-day courses of antibiotics without considering the implications this may have for our patients. This practice is now being side-lined by the more reasonable strategy of individualizing the duration of antibiotic treatment in patients with CAP.

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