Antibiotic treatment of exacerbations of COPD: a randomized, controlled trial comparing procalcitonin-guidance with standard therapy

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BACKGROUND: Therapy with antibiotics influences recovery only in selected cases of COPD exacerbations. We evaluated the efficacy and safety of procalcitonin guidance compared to standard therapy with antibiotic prescriptions in patients experiencing exacerbations of COPD. METHODS: A total of 208 consecutive patients requiring hospitalization for COPD exacerbation were randomized at the index exacerbation to procalcitonin-guided or standard antibiotic therapy. Patients receiving procalcitonin-guided therapy were treated with antibiotics according to serum procalcitonin levels; standard-therapy patients received antibiotics according to the attending physician. The primary outcome was the antibiotic exposure at the index exacerbation and the subsequent antibiotic requirement for COPD exacerbation within 6 months. Secondary outcomes were clinical recovery, symptom scores, length of hospitalization, ICU stay, death, lung function, exacerbation rate, and time to next exacerbation. RESULTS: At the index exacerbation, procalcitonin guidance reduced antibiotic prescription (40% vs 72%, respectively; p > 0.0001) and antibiotic exposure (relative risk [RR], 0.56; 95% confidence interval [CI], 0.43 to 0.73; p > 0.0001) compared to standard therapy. Moreover, procalcitonin guidance at the index exacerbation allowed a significant sustained reduction in total antibiotic exposure for up to 6 months (RR, 0.76; 95% CI, 0.64 to 0.92; p = 0.004). Clinical outcome and improvement in FEV(1) at 14 days and 6 months did not differ between groups. Within 6 months, the exacerbation rate (0.62 vs 0.64, respectively), the rehospitalization rate (0.21 vs 0.24, respectively), and mean (+/- SD) time to the next exacerbation (70.0 +/- 46.1 vs 70.4 +/- 51.9 days, respectively; p = 0.523) were similar in both groups. CONCLUSIONS: Procalcitonin guidance for exacerbations of COPD offers a sustained advantage over standard therapy in reducing antibiotic use for up to 6 months with a number-needed-to-treat of 3.
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