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Not enough of a good thing: worsening of pneumococcal meningitis after corticosteroid discontinuation

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Background: In pneumococcal meningitis, dexamethasone (DXM) has been proven beneficial in reducing death and increasing survival without disability when associated with antibiotics during the first 4 days. Worsening following DXM discontinuation has been observed, but rarely reported. Moreover, no data currently exist about the benefits of DXM reintroduction. In this context, our objective was to better characterize cases of pneumococcal meningitis with secondary deterioration after initial improvement.

Material/methods: A first call for clinical cases was issued to french infectious disease specialists to collect cases concerning patients with pneumococcal meningitis whose condition worsened on DXM discontinuation. Criteria for inclusion were age over 18 years, documented pneumococcal meningitis with appropriate management (antibiotic and early DXM 10 mg/kg 4 times a day for 4 days), initial favourable evolution up to DXM discontinuation on day 4, followed by deterioration.

Results: Fourteen cases were retrospectively collected. Eight were men. Median age was 57 years (range: 39-74). Five patients had risk factors for invasive pneumococcal disease. The median time to worsening after corticosteroid discontinuation was 2 days (1-18), 9 before day 3 and 5 after day 9. Among the patients with late worsening, only one out of 5 had an unfavourable outcome (death) while out of the nine patients with early deterioration four died and four had sequela. DXM was reintroduced for 13 patients, within a median time of 2 days (1-6) after the worsening, for 2 to 26 weeks. All but one patient had cerebral artery vasculitis on MRI or CT-scan. Early reintroduction (within a day), and maintenance of corticosteroids for at least one month may be necessary in order to expect a favourable outcome.

Conclusions: In patients adequately treated for pneumococcal meningitis who deteriorate after DXM discontinuation, vasculitis is the first diagnosis to be ruled out. DXM reintroduction may be beneficial, especially if early, and prolonged. An international retrospective cohort is ongoing in order to identify risk factors for vasculitis after discontinuation of corticosteroids. If these results are confirmed with a larger study, patients at risk may benefit from corticosteroids beyond day 4.