Prolonged higher dose methylprednisolone *versus* conventional dexamethasone in COVID-19 pneumonia: a randomised controlled trial (MEDEAS)

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Shareable abstract (@ERSpublications)
Infusive methylprednisolone did not show major advantages over conventional dexamethasone in severe COVID-19 pneumonia, confirming the favourable drug class effect of prolonged, low-dose glucocorticoids postulated by current guidelines https://bit.ly/3zxSwMn

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Abstract

Background Dysregulated systemic inflammation is the primary driver of mortality in severe coronavirus disease 2019 (COVID-19) pneumonia. Current guidelines favour a 7–10-day course of any glucocorticoid equivalent to dexamethasone 6 mg daily. A comparative randomised controlled trial (RCT) with a higher dose and a longer duration of intervention was lacking.

Methods We conducted a multicentre, open-label RCT to investigate methylprednisolone 80 mg as a continuous daily infusion for 8 days followed by slow tapering *versus* dexamethasone 6 mg once daily for up to 10 days in adult patients with COVID-19 pneumonia requiring oxygen or noninvasive respiratory support. The primary outcome was reduction in 28-day mortality. Secondary outcomes were mechanical ventilation-free days at 28 days, need for intensive care unit (ICU) referral, length of hospitalisation, need for tracheostomy, and changes in C-reactive protein (CRP) levels, arterial oxygen tension/inspiratory oxygen fraction (P_{aO_2}/F_{IO_2}) ratio and World Health Organization Clinical Progression Scale at days 3, 7 and 14.

Results 677 randomised patients were included. Findings are reported as methylprednisolone (n=337) *versus* dexamethasone (n=340). By day 28, there were no significant differences in mortality (35 (10.4%) *versus* 41 (12.1%); p=0.49) nor in median mechanical ventilation-free days (median (interquartile range (IQR)) 23 (14) *versus* 24 (16) days; p=0.49). ICU referral was necessary in 41 (12.2%) *versus* 45 (13.2%) (p=0.68) and tracheostomy in 8 (2.4%) *versus* 9 (2.6%) (p=0.82). Survivors in the methylprednisolone group required a longer median (IQR) hospitalisation (15 (11) *versus* 14 (11) days; p=0.005) and experienced an improvement in CRP levels, but not in P_{aO_2}/F_{IO_2} ratio, at days 7 and 14. There were no differences in disease progression at the prespecified time-points.

Conclusion Prolonged, higher dose methylprednisolone did not reduce mortality at 28 days compared with conventional dexamethasone in COVID-19 pneumonia.