

Title

Mepolizumab and response to oral prednisolone in patients with severe eosinophilic asthma

Authors

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Aims

Mepolizumab, an anti-IL-5 monoclonal antibody, reduces circulating and airway eosinophils in severe eosinophilic asthma. The response to corticosteroids in asthma is related to the presence of eosinophilic airways inflammation. We have tested the hypothesis that mepolizumab treatment is associated with a reduced response to oral corticosteroids in patients with severe eosinophilic asthma.

Methods

A randomised controlled trial of mepolizumab in severe asthma was conducted as previously described (Haldar et al, NEJM 2009 360:973-984). Subjects in the mepolizumab arm had 2 weeks of oral prednisolone treatment (0.5mg/kg) prior to receiving mepolizumab 750 mg IV every 4 weeks. This was repeated at the end of the 12 month treatment period, 4 weeks after the last dose of mepolizumab. Spirometry, Asthma Control Questionnaire 5 (ACQ5) and visual analogue scale (VAS) for cough, breathlessness and wheeze were measured before and each course of prednisolone. Paired t-tests were used to compare the change in each measure before and on mepolizumab treatment.

Results

28 subjects were evaluated. Prednisolone was associated with a significant greater improvement in mean VAS prior to mepolizumab compared to on mepolizumab. There was no significant change in FEV1 and ACQ5 (table).

Response to prednisolone	Prior to mepolizumab	On mepolizumab	Between group difference	<i>p</i>
Mean Δ VAS (mm)	14.6 (6.4-22.9)	2.8 (-3.5-9.1)	11 (0.9-21)	0.03
Mean Δ ACQ5	0.3 (0-0.6)	0.17 (-0.2-.5)	0.13 (-0.1-0.4)	0.34
Mean Δ FEV1 (L)	0.07 (-0.2-0.1)	0.1 (-0.2-0.0)	-0.07 (-0.1-0.3)	0.5

Δ Difference between pre and post steroid visits. Data shown as mean (95%CI)

Conclusion

Treatment with mepolizumab is associated with an attenuated symptomatic response to prednisolone treatment in severe eosinophilic asthma via a mechanism that is likely to be independent of changes in airflow limitation.