Monitoring serum etanercept levels in juvenile idiopathic arthritis: a pilot study

Sirs,

Etanercept (ETN) has shown to be effective in the treatment of non-systemic juvenile idiopathic arthritis (JIA). Serum levels of ETN and anti-drug antibodies (ADAbs) have been elsewhere determined in JIA (1). However, it is generally agreed that these antibodies are non-neutralising and do not influence drug safety or efficacy, at least in adults with rheumatoid arthritis (2).

Our aim was to investigate the usefulness of monitoring serum ETN levels and ADAbs in a retrospective chart review. All patients included were required to: 1) meet JIA criteria, according to the International League of Associations for Rheumatology (ILAR) (3); 2) have responded successfully to ETN and consequently show inactive or little active disease, otherwise etanercept would have been withdrawn and switching to a different biologic agent indicated; and 3) have serum drug levels and ADAbs measurements. Weight in kg, ETN dose in mg, and interval dosing (from once or twice a week to every two weeks or longer) should be available. Several patients were receiving an ETN weekly dose less than 0.8 mg/kg, due to achievement of inactive disease at the minimum dose to keep disease remission, and the serum drug levels associated with the dose received and the little activity.

Serum ETN levels were determined by capture ELISA using Progenika SL (Derio, Vizcaya, Spain) reactives, while ADAbs have been elsewhere determined in JIA (1). The most extreme case was that of a patient who while receiving 0.15 mg/kg/w presented 0 ng/ml of ETN. However, serum ETN levels did not show association with the little activity and did not lead to drug withdrawal. ETN was interrupted in 6 children by clinical decision, always in case of inactive disease. All of them experienced a flare between 1 and 15 months later (mean 6.5). They received ETN a mean of 2.3 years, being the mean of serum drug levels of 1094 ng/ml at discontinuation.

Table I summarizes the characteristics of 40 patients with JIA responders to etanercept, having three serum drug determinations. Number of patients is 40, 34, 22. ETN previously was 5 (15), 10 (29), 10 (45). Treatment duration (y) was 1.5±0.4 (0.2-5.6), 2±1.4 (0.3-6.6), 2±1.4 (0.3-6.6). ETN levels (ng/ml) were 1533±1065 (57-5861), 1842±1062 (50-4030), 1933±1239 (0-4708). ADAbs (AU/ml) were 0, 0, 0.

Table I. Characteristics of 40 patients with JIA responders to etanercept, having three serum drug levels and anti-drug antibodies measurements.

<table>
<thead>
<tr>
<th>Determinations</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>ADAbs (AU/ml)</td>
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<td>0</td>
</tr>
</tbody>
</table>

Values are expressed as n (%) unless otherwise specified. JIA: juvenile idiopathic arthritis; ETN: etanercept; ADAbs: Anti-ETN antibodies; JADAS: Juvenile Arthritis Disease Activity score; MTX: methotrexate.

Key message

In patients with inactive or little JIA, serum ETN levels were associated with the dose that patients received and ADAbs were not detected in any case.

Fig. 1. Serum etanercept levels (ng/ml) vs dose range that patients received (1 ±0.7 mg/kg/w; 2 <0.7 and ≥0.5 mg/kg/w; 3 <0.5 mg/kg/w) in the three determinations.
Letters to the Editors

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References