Dermatology Practical & Conceptual

The Effect of Dupilumab on Growth Parameters in Pediatric Atopic Dermatitis Patients

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Introduction

No data have been previously published about the relationship between dupilumab and growth charts in children [1-3], but the treatment result in our patient was so impressive that we considered it important to share it.

Case Presentation

The patient was referred to us when he was 4 years old, affected by a severe form of atopic dermatitis (AD), with EASI 24, NRS 10, cDLQI 18 (Figure 1A). The child was otherwise healthy, apart from the AD and the high counts of blood eosinophils and serum IgE. AD had appeared in the first months of life, and it progressively worsened with childhood. At the time of consultation, the patient's weight was lower than the 3rd percentile, and height was at the 10-25 percentile. The parents were concerned about that, but it was attributed to a constitutional reason.

The patient was initially prescribed potent topical steroid and topical calcineurin inhibitors, with transient, partial response. At the age of five, the patient was prescribed oral cyclosporine (4 mg/kg/day), but the parents refused treatment because of concerns about side effects. Finally, at the age of six, the patient started treatment with dupilumab 200 mg, with a high impact on disease severity, itch, sleep disturbance, and quality of life (after 48 weeks, EASI 2, NRS 1, cDLQI 1) (Figure 1B). Apart from the expected results of the treatment, the patient incredibly started gaining weight (10-25 percentile) and height (25-50 percentile), thus appearing as generally healthy.

Conclusion

A recent paper showed how a twin affected by AD was significantly shorter than her healthy sister [4]. A more recent study investigated the impact of moderate-to-severe AD on growth in patients younger than 12 years,

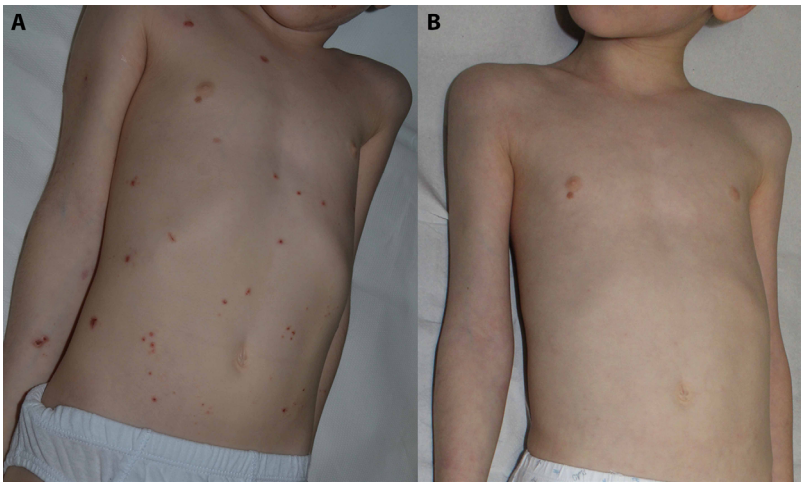

Figure 1. (A) The patient at the age of five with a severe form of atopic dermatitis (B) The same patients **48** weeks after starting dupilumab.

showing a higher mean weight and BMI and lower mean height in AD patients than in the reference healthy population [5].

Different explanations may be advanced:

1. Severe AD is definitely a systemic disease that may potentially affect growth in children. Proper treatment may interfere with this effect.
2. Sleep disturbance secondary to AD could reduce growth hormone (GH) production and impact child's growth. Treatment ameliorates quality of sleep, thus impacting proper production of GH, thus positively impacting growth.
3. Psychological impact of AD can modify eating habits in children, which may be without appetite. Improving disease may be significant for a regular and adequate nutrition.
4. Dupilumab has been associated with a significant activity of alkaline phosphatase in children, a marker of bone mineralization, thus meaning that it indirectly favors growth [6].

All the above reasons may contribute to the effects of dupilumab on growth charts in children.

We hope that this observation, although limited to a single patient, can be a useful spark to induce other clinicians to investigate the impact of dupilumab on growth charts in children, once again confirming the importance of an early systemic treatment in children with severe AD.

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