READER'S FORUM

Soonshin Hwang, Chooryung J. Chung, Yoon Jeong Choi, Taeyeon Kim, Kyung-Ho Kim

The effect of cetirizine, a histamine 1 receptor antagonist, on bone remodeling after calvarial suture expansion.

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In recent days, environmental pollution has become a big issue to all of us. I agree with the authors about atopic dermatitis and asthma as I see many children under orthodontic care are also treated for the conditions as well. So, I am impressed by your work regarding the effect of histamine 1 receptor antagonists (H1RAs) and also appreciative of your results, which may help rapid maxillary expansion cases.

Q1. How do you expect H1RAs to affect tooth movement based on your study?

Q2. There are many anti-histamine drugs available worldwide. Your choice was cetirizine in this investigation. Could you explain more about the cetirizine and your reasoning behind this selection?

Q3. It seems there had been delayed histological examination results. In the expansion group a significant level of difference was observed at the 28-day observation period. Also, both osteocalcin and carboxy-terminal collagen crosslinks were seen at day 28. Would please comment on those delays, including what it could mean about its clinical application?

Questioned by

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We would like to express our appreciation for the interest in our published article.

A1. A previous study by Meh et al.¹ applied cetirizine treatment to show differences in tooth movements in a rat model. The same study also showed decreased amount of tooth movement and osteoclast volume density ($p < 0.001$) from day 28 onward.¹ Therefore, it would be reasonable to expect an interference with orthodontic tooth movement after cetirizine administration.

A2. There are two major reasons in using cetirizine in this study. First, H1RAs have been shown to increase the mechanical properties of the bone by inhibiting bone resorption.² Second, one of the major side effects of antihistamine intake is drowsiness. However, cetirizine shows a low incidence of sedative effects most likely caused by its diminished potential to cross the blood-brain barrier.³ In a clinical setting, a patient suffering from allergic symptoms would be more likely to take antihistamines with less side effects.

A3. Suppression in osteoclastic activity occurred at day 28, which was in line with a previous study by Meh et al.¹ From the results of this present study, it is difficult to suspect a definite reason for this delayed effect. However, although this study was in a rat model, the results of this study suggest that an intake of H1RA may aid in stability of the expanded suture area by increased bone formation. This could be a clinically positive effect in terms of stably

maintaining expanded craniofacial sutures in orthognathic treatment.

Replied by

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