How weight gain change bone turnover with women in Anorexia nervosa

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Introduction / Objectifs

Osteoporosis is one of the principal complications of anorexia nervosa (AN). We already know that body weight gain and menstrual recovery ameliorate their bone mineral density (BMD). However it is often difficult to improve BMD especially in severe AN patients. Objective; We investigated the process of bone metabolism change during the treatment including body weight gain in patients with AN.

Patients et méthodes

36 patients of severe AN (female, mean age ±SEM, 30 ±1.13 years, BMI 12.1±1.2kg/m²) treated with the inpatients CBT program were enrolled in this retrospective research at one hospital. Prior to and after treatment, their BMD of the spine and whole body by dual-energy x-ray absorptiometry, serum intact N-terminal propeptide of type 1 procollagen (P1NP), tartrate-resistant acid phosphatase-5b (TRACP-5b) and sclerostin levels were measured. All statistical analyses were performed using JMP pro version 11.0. The significant difference value was set as P < 0.05.

Résultats

Table 1

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Baseline characteristics of the study participants, and changes in physical and biological markers during the treatment.</th>
<th>Despite body weight increased significantly (All remained amenorrhea), bone mass and BMD significantly decreased. Serum ALP, LH, FSH, E2 and P1NP levels increased. TRACP-5b levels decreased, whereas sclerostin levels were invariant in this treatment protocol.</th>
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Table 2

| Table 2 | Correlations between sclerostin and change in bone turnover marker and BMI. Change in BMD positively correlated with change in BMI and sclerostin. In fact, there is a significant correlation between sclerostin and change in sclerostin (R=-0.773, P<0.001), so which may be confounding factor. Other biological markers have no correlation with change in BMD(data not shown). |
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Table 3

| Table 3 | Correlations of the changes during the treatment among bone turnover marker and BMI. Change in BMD positively correlated with change in BMI and sclerostin. In fact, there is a significant correlation between sclerostin and change in sclerostin (R=-0.773, P<0.001), so which may be confounding factor. Other biological markers have no correlation with change in BMD(data not shown). |
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Discussion

High sclerostin levels in women with AN
Negative correlation between sclerostin and change in BMD whole body

Two studies reported that sclerostin levels were higher in women with AN compared with normal weight controls and had no correlations with other bone turnover markers.1,2 High expression of AMPK, glucocorticoid, weak mechanical load and low body fat increase the expression of sclerostin, which might explain high sclerostin level in patients with AN. High sclerostin and low P1NP represent depression of osteoblast activity. Our data demonstrate that sclerostin and P1NP levels are key factors for amelioration of BMD. It therefore suggests that recovery of bone formation is essential for treatment of osteoporosis in women with AN.

Conclusion

This study demonstrates that weight gain induces bone formation and reduces bone resorption in severe case of AN without BMD recovery. Sclerostin at baseline could be a good predictor of reaction of BMD.

Références


L’auteur n’a pas transmis de déclaration de conflit d’intérêt.