

再録 報文

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A rs936306 C/T polymorphism in the CYP19A1 is associated with stress fractures.

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Abstract

Background: A stress fracture (SF) is an overuse injury, and low bone mineral density (BMD) is the risk factor for the SF. Estrogen is suggested to have a crucial role in bone metabolism, and estrogen-related genetic polymorphisms are associated with BMD. However, the possible association between SF and estrogen-related genetic polymorphisms has not been clarified yet. Therefore, we aimed to clarify whether estrogen-related genetic polymorphisms are associated with a history of SFs in Japanese athletes.

Methods: A total of 1,311 (men: n = 868, women: n = 443) top-level Japanese athletes who participated in various sports and at different levels were analyzed. The history of SFs was assessed using a questionnaire, and the cytochrome P450 aromatase gene (CYP19A1) rs936306 C/T and estrogen receptor α gene (ESR1) rs2234693 T/C polymorphisms were analyzed using the TaqMan genotyping assay.

Results: The genotype frequency of the CYP19A1 C/T polymorphism was significantly different between the injured group and noninjured group under the C allele additive genetic model (odds ratio = 1.31, 95% confidence interval = 1.01-1.70), especially in men and in women with irregular menstruation. On the other hand, there were no significant differences with the ESR1 T/C polymorphism.

Conclusions: This study demonstrated that the C allele in the CYP19A1 rs936306 polymorphism is a risk factor for SFs in top-level Japanese athletes.