

Abstract

INFLUENCE OF SEROTONIN-RELATED GENES ON BEHAVIOR AND BODY WEIGHT

Rationale: The neurotransmitter serotonin has been implicated in the regulation of normal behaviors, including food intake, and attributed importance for a variety of common psychiatric conditions, including major depression, suicidal behavior, eating disorders and premenstrual dysphoria. The purpose of these studies was to explore the possible influence of genetic variation in serotonin-related genes on a) body weight, b) binding capacity of the serotonin transporter in the brain of suicide attempters and c) a disorder for which numerous findings suggest serotonin to play a key role, *i.e.*, premenstrual dysphoria. **Observations:** 1) An amino acid substitution (Cys23Ser) in the gene encoding the serotonin receptor 5-HT_{2C} (*HTR2C*) was associated with weight loss in teenage girls. 2) Supporting the above-mentioned finding, the Cys23Ser substitution in the *HTR2C* was associated with low body weight also in a middle-aged female cohort recruited from the general population; in addition, influences on weight of a SNP in the promoter region of *HTR2C*, as well of a polymorphism, 5-HTTLPR, in the gene encoding the serotonin transporter, *SLC6A4*, were found. 3) Both the 5-HTTLPR polymorphism and a variable number of tandem repeats (VNTR) in intron 2 (STin2) of *SLC6A4* were shown to be associated with binding capacity of the serotonin transporter in brains of suicide attempters. 4) Genes coding for the serotonin receptor subunit 5-HT_{3B} and a transcription factor involved in the development and differentiation of serotonergic neurons, *GATA2*, were associated with premenstrual dysphoria. **Conclusions:** Our results add to the growing literature suggesting variations in serotonin-related genes to be of importance for inter-individual differences in behavior.

Key words: serotonin – genes – polymorphism – *HTR2C* – *SLC6A4* – *HTR3B* – *GATA2* – body weight – anorexia nervosa – suicide – premenstrual dysphoria

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av

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- I. Westberg L, **Bah J**, Råstam M, Gillberg C, Wentz E, Melke J, Hellstrand M, Eriksson E. Association between a polymorphism of the 5-HT_{2C} receptor and weight loss in teenage girls. *Neuropsychopharmacology*, Jun;26(6):789-93, 2002
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