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RELATIONSHIP BETWEEN SEROTONIN TRANSPORTER AND BONE LOSS

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Background: 5-HTTLPR (serotonin transporter linked polymorphic region) has long (l) and short (s) allelic variations. The s allele is linked to depression, anxiety, and slower response to selective serotonin reuptake inhibitors (SSRI). Both depression and SSRI's are associated with bone loss and fractures. We explored the relationship between the 5-HTTLPR and bone loss.

Methods: IRB-approved retrospective chart review of adult psychiatric patients during a 10-year period with both 5-HTTLPR genotype and bone mineral density (BMD) assessment (hip and spine BMD stratified by age, Z-scores < 50, T-scores ≥50 years). Age, gender, and BMD scores were compared between the 5-HTTLPR categories of s allele (l/s and s/s genotypes) versus l/l genotype using one-way ANOVA.

Results: Of 3016 with 5-HTTLPR genotyping, 239 had BMD, with 157 (66%) s allele and 82 (34%) l/l genotypes. Among men and women < 50 years, s allele had lower Z-scores in the hip (-0.6628/n=43 vs -0.1306/n=36, p=0.012) and spine (-0.9762/n=42 vs -0.1000/n=41, p=0.0019) than l/l. There were no differences in T-scores between the s allele and l/l genotypes for men and women ≥50 years. Gender analysis (n=198 women, n=41 men) showed women with s allele had lower Z-scores in the hip (-0.68182/n=33 vs -0.08788/n=33, p=0.0146) and spine (-1.0250/n=32 vs -0.0586/n=29, p=0.0020) than the l/l genotype.

Conclusions: The s allele is associated with lower bone density at the hip and spine in younger adults, particularly in younger women. Our results suggest 5-HTTLPR variants may mediate serotonin effects on bone in a gender-specific or hormonal/ menopausal-dependent interaction.

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