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P121 Background of the Development of Carotid and Femoral Atherosclerotic Plaques in Twins

David Laszlo Tarnoki, Helga Szabo, Kata Gyulay, Zsofia Jokkel, Rebeka Debreceni, Greta Janositz, Anita Hernyes, Viktor Berczi, Adam Domonkos Tarnoki

Department of Radiology, Semmelweis University, Budapest, Hungary

ABSTRACT

Introduction: Development of carotid and femoral atherosclerotic plaques proved to be heritable in previous studies. However, no comprehensive ultrasonographic evaluation of the volume and types of plaque has been performed.

Methods: Comprehensive carotid and femoral arterial ultrasound examination (Samsung RS85, arterial analysis, 15 MHz probe) was performed in 92 Hungarian twins (54 monozygotic, MZ and 38 dizygotic, DZ twin pairs, mean age 54 ± 13 years). The volume of plaques was automatically measured, and the plaque type was grouped according to echogenicity. Raw heritability was evaluated using the Falconer formula.

Results: No heritability of the total number of carotid and femoral plaques and total plaque volume was detected. Although the number of carotid plaques themselves has been found to be hereditary (h_2 = 0.492), the volume of carotid and femoral plaques as well as the number of femoral plaques were not heritable. More MZ twin pairs were discordant in the presence of soft plaques in the carotid artery as DZ twin pairs, but greater similarity in femoral plaques was not detected between MZ twins, which does not indicate a genetic background. The presence of calcified and mixed echogenic carotid plaques in the MZ twins was more concordant as in DZ twins, indicating inheritance.

Conclusion: The total number and volume of carotid and femoral plaques are influenced by the environment. Different plaque types have different backgrounds: while calcified and mixed echogenic carotid plaques are more affected by genetics, soft carotid and femoral plaques are more affected by the environment.