The effect of age-related IGF-1 deficiency and the occurrence of cardiometabolic risk factors in the Polish population

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INTRODUCTION

Literature data provide evidence of significant age-related decline in circulating levels of insulin like growth factor-1 (IGF-1) [1, 2]. The paracrine IGF-1 system confers vasoprotection and cardioprotection effects and contributes to maintenance of the functional integrity of the neuromuscular system [3, 4]. The aim of the present study was to identify the association between the age-related decline in IGF-1 secretion with the occurrence of cardiometabolic risk factors (CMRFs) in a population-based sample of Polish older adults.

METHODS:

Anthropometric and biochemical parameters were assessed in 982 participants (aged 55-104 years), a population-based sample of Polish older adults. The presented data were collected from a nationwide, multicentre PolSenior Study conducted from 2007 to 2011. In all subjects serum contents of glucose, insulin, total and HDL cholesterol (TC and HDL-C), triglycerides (TG), IGF-1, and IGFBP-3 were measured. To determine IGF-1 bioavailability, the IGF-1/IGFBP-3 molar ratio was calculated. In order to evaluate the risk for cardiometabolic disease, lipid ratios (TC/HDL-C, LDL-C/HDL-C, TG/HDL-C), atherogenic index of plasma (AIP) and insulin resistance index (HOMA-IR) were calculated. Variables of lipid profile, HOMA-IR and somatic variables were used to identify individuals with any CMRF. The Statistica package v. 12 (StatSoft Poland, 12.0) was used for data processing and analyses.

RESULTS:

The results of the study have demonstrated differences in selected cardiometabolic risk factors levels in response to age and gender. Serum IGF-1 concentrations significantly decrease with age ($F = 5.7$ $p < 0.001$). Higher serum IGF-1 and lower IGFBP-3 levels were found in male compared to female subjects and significant associations were observed between HOMA-IR and IGF-1 levels ($F = 7.0$ $p < 0.01$). Individuals with higher IGF-1/IGFBP-3 ratio ($p < 0.05$) and higher serum IGF-1 contents were characterized by lower HOMA-IR levels. A significantly higher serum IGF-1 and IGF-1 bioavailability were associated with lower level of insulin resistance, a favorable changes in lipid profile, and higher prevalence of normal blood pressure.

CONCLUSIONS: These findings suggest that low IGF-1 levels have been associated with an increased risk of developing cardiovascular disease and diabetes in older adults.

References

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