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Visceral fat mass: Is it the link between uric acid and diabetes risk?

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Uric Acid (UA) has been suggested as a novel risk factor for diabetes. However, as it is also accompanied with other major risk factors such as obesity and high visceral adiposity, its definite role in this area is still the subject of discussion. Therefore, in this study we aimed to investigate the associations between plasma UA and fasting plasma glucose, HbA1c, lipid profile and inflammatory markers after accounting for the contribution of other diabetes risk factors such as BMI and VAT fat mass. In a cross-sectional study, 100 non-diabetic middle-aged males and females were recruited. Central fat distribution measures including android to gynoid fat ratio, VAT and Subcutaneous Adipose Tissue (SAT) fat mass were determined using Dual-energy X-ray Absorptiometry (DXA). Biochemical analysis was done using methods well established for clinical and research laboratories. Multiple linear regression analysis was performed to do statistical analysis. UA was positively associated with Body Mass Index (BMI) [r (98)=0.42; P≤0.001], android to gynoid fat ratio [r(98)=0.62; P≤0.001] and VAT fat mass [r (96)=0.55; P≤0.001]. UA was also positively associated with plasma glucose [r (98)=0.33; P≤0.001], HbA1c [r (93)=0.25; P=0.014], triglyceride [rs (95)=0.40; P≤0.001], HDL-cholesterol [r (98)=-0.61; P≤0.001] and CRP [rs (98)=0.23, P=0.026]. However, these associations were no longer significant after accounting for BMI or/and VAT fat mass. No significant association was observed between UA and SAT fat mass [r (97)=0.02; P≥0.05], Total cholesterol [r (98)=0.03; P≥0.05], LDL-cholesterol [r (98)=0.13; P≥0.05], TNF-α [r (97)=0.12; P≥0.05] and IL-6 [r (96)=-0.02, P≥0.05]. Our results suggest, for the first time, that VAT fat mass plays a major role in linking plasma UA and glucose in a non-diabetic population.

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