

Association Between Visceral Adiposity Index, Hirsutism and Cardiometabolic Risk Factors in Women with Polycystic Ovarian Syndrome

S. Fonseka^{1*}, B. Subhani¹, A. R. T. V Alahakoon¹, J. N. Gunawardana¹, S. N. B. Dassanayake¹, H. M. S. S. Herath², C.N. Wijeyaratne³, I.B. Gawarammana⁴, N.S. Kalupahana⁵, S Rosairo⁶, P.V.R. Kumarasiri⁷

Departments of ¹Pharmacology, ²Nuclear Medicine ⁴Medicine, ⁵Physiology, ⁶Radiology, and ⁷Community Medicine, Faculty of Medicine, University of Peradeniya, Sri Lanka, ³Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Colombo, Sri Lanka

**sanjeewani.fonseka@yahoo.com*

Visceral adiposity index (VAI) is a mathematical index derived from the body mass index (BMI), waist circumference (WC), serum fasting triglyceride (TG) and high-density lipoprotein cholesterol (HDL-C). It reflects visceral adipocyte dysfunction (VAD) and is associated with cardiometabolic risk. Women with polycystic ovarian disease (PCOD) have adipocyte dysfunction, which is associated with metabolic disorders. Hirsutism in PCOD is considered to be due to high insulin levels which enhances androgen activity at the pilosebaceous unit. Objectives were to determine the association between VAI, hirsutism and cardiometabolic risk factors in patients with PCOD. A cross-sectional study of 99 patients aged 18-40 years with PCOD diagnosed by the Rotterdam consensus criteria-2003 and a hirsutism score of 8 or more according to the Ferriman-Gallway Score (FGS) was carried out. BMI, WC, fasting lipid profile, serum leptin, insulin, sex hormone binding globulin (SHBG), free-androgen index (FAI), fasting blood glucose (FBG) and oral glucose tolerance test (OGTT) were determined. Homeostasis model assessment (HOMA)-beta, HOMA-insulin resistance (IR) and VAI were calculated. Diameter and rate of hair growth at sideburns and chin and density of hair at sideburns were measured. Data were analyzed by SPSS-22.0. There was no significant association between parameters of hirsutism and VAI [Correlation between natural logarithms of VAI and hirsutism parameters were: rate of hair growth on the left : $r=-0.047$ ($p=0.646$), right : $r=-0.012$ ($p=0.904$), chin: $r = -0.044$ ($p=0.664$); density of hair growth: $r = 0.099$ ($p=0.33$); diameter of hair on the left : $r=0.015$ ($p=0.886$), right : $r = 0.079$ ($p=0.438$) and chin: $r = 0.145$ ($p=0.152$)]. There was a significant association between VAI and OGTT, FAI, systolic and diastolic blood pressure, but not between VAI and other metabolic parameters. Visceral adipocyte dysfunction is closely linked to glucose intolerance and blood pressure in women with PCOD. However, hirsutism is unlikely to be due to adipocyte dysfunction

Key words: Adipocyte dysfunction, Cardiometabolic risk factors, Hirsutism, Polycystic ovarian disease, Visceral adiposity index