

Effects of Combined Oral Contraceptive Pills Alone and in Combination With Low-Dose Metformin on Glucose and Lipid Homeostasis and Androgenic Hormone Profile in Hirsute Women with Polycystic Ovary Syndrome

S. Fonseka^{1*}, G. D. D. J. Bandara¹, Y. M. D. M. Bandara¹, J. N. Gunawardana¹, A. M. I. R. K. Athauda¹, A. M. P. S. T. M. Bandara², C.N. Wijeyaratne³, I. B. Gawarammana⁴, N. S. Kalupahana⁵, S Rosairo⁶, P. V. R. Kumarasiri⁷

*Departments of ¹Pharmacology, ²Biochemistry ⁴Medicine, ⁵Physiology⁶; Radiology, and ⁷Community Medicine, Faculty of Medicine, University of Peradeniya, Sri Lanka, ³Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Colombo, Sri Lanka
sanjeevani.fonseka@yahoo.com

The effects of combined oral contraceptive pills and metformin on glucose and lipid metabolism and androgenic hormone profile of women with polycystic ovary syndrome (PCOS) are not clearly known. Hence, this randomised, double-blind study was conducted to determine the effects of ethinylestradiol (35 microg)/cyproterone acetate (2mg) (EE/CPA) and ethinylestradiol (20 microg)/desogestrel 0.15mg (EE/DES), alone and in combination with metformin on glucose and lipid metabolism and androgenic hormone profile in hirsute women with PCOS. A total of 107 patients with PCOS (Rotterdam Consensus Conference Criteria 2003) having a hirsutism score of 8 or more in the modified Ferriman-Gallwey Score (mFGS), were randomised to receive four drug therapies (arm A: EE/CPA, arm B: EE/DES, arm C: EE/CPA plus metformin, arm D: EE/DES plus metformin). Body mass index, fasting plasma glucose, area under the curve of the oral glucose tolerance test, fasting serum insulin, fasting lipids, serum leptin, total testosterone, and sex hormone binding globulin were determined at initiation and 12 months. Homeostasis model assessment of beta cell function (HOMA β), homeostasis model assessment-estimated insulin resistance (HOMA- IR) and free androgen index were calculated. Statistical analysis was done with two way ANOVA. There was no significant difference between the treatment arms in the outcome measures at the end of 12 months. Within the treatment arms, there was reduction of HOMA- β in EE/DES arm, serum leptin in EE/CPA plus metformin arm, CHO/HDL ratio in EE/DES plus metformin arm and an increase in total cholesterol and LDL-cholesterol in both EE/DES arm and EE/CPA plus metformin arm. EE/DES and EE/CPA with and without low-dose metformin did not have a significant overall effect on glucose and lipid metabolism and androgenic hormonal profile in hirsute women with PCOS. However, desogestrel has reduced the beta cell function and both desogestrel and cyproterone had adversely affected the lipid levels.

Key words: Polycystic Ovary Syndrome, Hirsute, Contraceptive Pills, Metformin