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Abstract Topic: - Complex traits and polygenic disorders

Abstract Title: - Analyzing the role of LHCGR variants in Polycystic Ovary Syndrome in the female population of Punjab

Presenting author name: - Sukhjashanpreet Singh

Presenting author institute: - Guru Nanak Dev University

Co-authors name: - Mandeep Kaur, Anupam Kaur

Co-authors institute: - Guru Nanak Dev University, Guru Nanak Dev University

Aims: - Polycystic ovary syndrome (PCOS) is one of the most prevailing endocrinopathies that affect 6-26% of women at their childbearing age worldwide. PCOS is a multifaceted disorder involving an interplay between multiple genes under the influence of environmental factors. The Genome-wide association studies on Han Chinese and European populations documented the LHCGR gene to be associated with PCOS. In this study, an association of the LHCGR rs4539842 and rs13405728 variants with PCOS was analyzed in the women of Punjab, India.

Methods: - The present study involved 600 women, 300 PCOS cases and 300 controls. The genotypic analysis was performed on the rs4539842 and rs13405728 variants utilizing the PCR-RFLP technique. Biochemical parameters such as triglycerides, cholesterol, and HDL were assessed for cases and controls. The SPSS (version 21, IBM SPSS, NY, USA) software was used for statistical analysis.

Results: - The findings suggested statistically significant differences in anthropometric variables, such as body mass index (BMI) and waist-to-hip ratio (WHR), were found between the PCOS cases and controls ($p < 0.05$). Women with PCOS appeared to be associated with higher levels of cholesterol, triglycerides, LDL, and VLDL and low levels of HDL as compared to control women ($p < 0.05$). Hormonal levels including Testosterone and LH were also found to be significantly different between both groups ($p < 0.05$). There was no statistically significant difference observed in the distribution of genotypic and allelic frequency of rs4539842 and rs13405728 variants between both cohorts ($p > 0.05$).

Conclusions: - The present study concluded that the LHCGR rs4539842 and rs13405728 variants were not associated with the risk of PCOS development in Punjab, India.

Keywords: - The findings suggested statistically significant differences in anthropometric variables, such as body mass index (BMI) and waist-to-hip ratio (WHR), were found between the PCOS cases and controls ($p < 0.05$). Women with PCOS appeared to be associated with higher levels of cholesterol, triglycerides, LDL, and VLDL and low levels of HDL as compared to control women ($p < 0.05$). Hormonal levels including Testosterone and LH were also found to be significantly different between both groups ($p < 0.05$). There was no statistically significant difference observed in the distribution of genotypic and allelic frequency of rs4539842 and rs13405728 variants between both cohorts ($p > 0.05$).