Objective: The aim of this study is to assess the different white blood cell (WBC) populations in women with PCOS and compare them to controls.

Methods: 38 subjects with PCOS and 68 age and Body Mass Index (BMI) matched healthy girls who presented in our Division, from 03/2004-03/2012 were included in this case-control study. Blood samples were taken from patients and controls to test for total WBC count, lymphocyte count, neutrophil count and monocytes count. PCOS was defined according to the Rotterdam criteria. Patients in control group had regular menstrual cycle and normal ovarian morphology detected by ultrasound.

Results: Mean age of menarche was 12.44±2.9 years and 12.06±2.96 years and mean age at first attendance 16.21±4 years and 14.83±2.94 years respectively for the PCOS patients and controls. All females, who enrolled in our study had normal BMI (≥18.5 and <25 Kg/m2). The mean WBC (7.9×10^9/l vs 5.9×10^9/l; p<0.001) was higher in the PCOS group compared with the control group. The neutrophil count was higher in the PCOS group (5.06×10^9/l vs 3.2×10^9/l; p<0.001). The mean lymphocyte count (2.09×10^9/l vs 2.13×10^9/l; p>0.05) and the mean monocytes count (0.55×10^9/l vs 0.35×10^9/l; p>0.05) was not statistically different between the 2 groups.

Conclusions: A high statistically significant correlation (P<0.001) was shown between increased WBC (due to increased neutrophils) and PCOS. The only independent variable which explained both the increased WBC and the increased neutrophil count was PCOS, which supports the evidence that PCOS is associated with low-grade inflammation. The increase appears to be due to the underlying PCOS, and not to the increased adiposity associated with PCOS. Further studies are needed in order to confirm our results.