Objectives
The objective of the study was to evaluate anti-Müllerian-hormone (AMH) and insulin resistance (IR) in the main phenotypic subgroups of normal-weight polycystic ovary syndrome (PCOS) and investigate the correlation between AMH levels and IR in women with PCOS.

Methods
Within this prospective study, 234 PCOS cases according to the Rotterdam Criteria with weight of 18-25 kg/m² and 70 healthy women matched by age and weight as controls were included. Four subgroups were set in women with PCOS based on the main features of PCOS as follows, Group 1: oligo-anovulation (OA)+/hyperandrogenism (HA)+/polycystic ovary (PCO)+, Group 2: OA+/PCO+/HA-, Group 3: HA+/PCO+/OA-, and Group 4: OA+/HA+/PCOM-. In all subjects, age, BMI, waist and hip circumference were measured. AMH, follicle-stimulating hormone (FSH); luteinizing hormone (LH); total testosterone (T), fasting plasma glucose (FPG), fasting insulin (FINS) were measured in early follicular phase. Insulin resistance indexes (Homeostatic Model Assessment) (HOMA-IR) and Quantitative Insulin Sensitivity Check Index (QUICKI) were calculated by the values of FPG and FINS. Additionally ovarian volume and No. of follicles 2-9 mm were assessed.

Results
No significant difference was found in all subgroups of PCOS and controls regarding the mean age, BMI, waist to hip ratio (WHR), values of FPG, FINS, HOMA-IR and QUICKI (p>0.05). The mean AMH levels were significantly higher in Group 1(OA+/HA+/PCO+), and then Group 3, 2, 4, and control group orderly (p<0.05 in all comparisons). FSH levels were significantly lower in Group 1 with controls (p<0.05). LH levels were significantly higher in Group 1and 3 with Group 2, 4 and controls, and higher in Group 2, 4 with controls (p<0.05). Total T levels were significantly higher in Group 1, and then Group 3, 4, 2 and control group orderly (p<0.05 in all comparisons). AMH levels were independently predicted, in order of significance, by ovarian volume, total testosterone levels, LH levels and age. Although not statistically significant, a negative correlation of AMH with HOMA-IR and a positive correlation with QUICKI were found.

Conclusions
AMH may be an useful parameter to assess the severity and prognosis of PCOS since certain differences exist in different phenotypes and to healthy women. Increased AMH levels in women with PCOS are the results of polycystic ovary, increased total T and LH levels, and age mainly. The relation between AMH and IR is not so clear yet with the current evidence, and more properly designed studies in large population are definitely needed.