INTRODUCTION

Polycystic ovary syndrome (PCOS) is the commonest endocrine disturbance affecting women in reproductive age. the presence of enlarged ovaries with multiple small cysts (2-8 mm) and a hypervascularized androgen secreting stroma has long been recognized as associated with signs of androgen excess (hirsutism, alopecia, acne), obesity and menstrual cycle distrubance (oligomenorrhea or amenorrhea) *(Balen, 1999)*.

The European view, in general, is that the syndrome encompasses any of the above mentioned signs, symptoms or endocrine abnormalities (elevated serum androgen and/or luteinizing hormone (LH) concentrations) *(Balen et al., 1995)* in north America, the consensus is that the syndrome is denoted by the combination of hyperandrogenism and ovulatory dysfunction, in the absence of non- classical adrenal hyperplasia, without necessarily having to identify the presence of polycystic ovaries by ultrasound scan *(Dumesic et al., 1997)*.

Raised circulating concentratrations of testosterone and reduced concentrations of sex hormone binding globulin (SHBG) are common findings and as a result the free androgen index (FAI) is often elevated. Roles of hormonal derangements on lipoprotein abnormalities remain unclear, however androgen and estrogens are thought to have opposing effects on lipoprotein metabolism. These effects may be mediated at the level of hepatic regulation of lipoprotein metabolism, insulin sensititvity and body fat distribution *(Baranowsk et al., 1999).*

The lipoprotein profile in obese patients with PCOS is characterized by elevated plasma triglycerides and reduced high density lipoprotein cholesterol (HDL-C) concentrations, which mirror those seen in subjects with type 2 diabetes *(Rajkhawa et al., 1997)*. Low density lipoprotein (LDL) cholesterol is often only modestly elevated in PCOS. However, a simple quantitative measurement of LDL concentration may be misleading since LDL does not exist as homogenous particles. Rather, LDL comprises several sub-populations of particles differing in lipid composition, density, size and atherogenic potential. LDL particles that are small and dense (LDL- III), are considered to be more atherogenic than larger LDL species (LDL-1 and LDL-II) and their preponderance in the circulation (even in the context of normal LDL- cholesterol concentration) is associated with a higher incidence of coronary heart disease (CHD) and type 2 diabetes *(Austin et al., 1988)*. Currently, data on LDL subfractions in subjects with PCOS are lacking.

Plasma triglyceride concentrations have a determinative influence on the concentration of small, dense LDL in the normal population *(McNamara et al., 1992)*.

Studies demonstrated that when plasma triglyceride concentrations are elevated, larger LDL particles become triglyceride enriched and thus suitable for conversion to smaller species by the action of the enzyme hepatic lipase (HL). Increased HL activity in turn is associated with insulin resistance *(Baynes et al., 1991)*.

Increased HL activity exhibits strong association with androgens up-regulating, and estrogen down-regulating activity. However, the relation between endogenous hyperandrogenemia and HL activity for

determining the abnormalities in LDL subfraction profiles in women with PCOS has not been established *(Pirwany et al., 2001)*.

In addition to dyslipidemia in PCOS, there are various factors such as hypertension, diabetes mellitus, cigarette smoking and genetic factor, may accelerate the atherogenic process and CHD. Delaying the onset and slowing down the progression of atherosclerosis has been a major public healthy initiative for the past several decades. Because atherosclerosis is so closely linked to the accumulation of lipoprotein particles, one of the most important strategies has focused on the management of dyslipidemia, especially in patients at high risk *(Genton et al., 2001)*.

AIM OF THE WORK

The aim of this study was to assess the lipid profile in cases of PCOS, however the ultimate aim was to predict and detect dyslipidemia in this group of patients, so it is possible to prevent or to delay the onset of atherosclerosis and CHD. This diagnosis of dyslipidemia in young women may have a major implications for long term health.