Introduction:
Obesity has a rising prevalence in children and adolescents, affecting 30% of the paediatric population in Portugal. Leptin is an important hormone involved in the pathogenesis of obesity and has been under investigation as a risk marker for future complications.

Objective:
1. To evaluate the relation between serum leptin levels and body mass index (BMI) and stature. 2. To compare leptin levels in obese and non-obese children. 3. To evaluate the relation between leptin levels and insulin resistance index.

Methods:
It was performed an descriptive, cross-sectional study, using a sample of 70 obese children attending outpatient clinic of Endocrinology at Hospital Pediátrico de Coimbra and a control group of 53 non-obese children. Obesity was defined as a BMI standard deviation > 2 for age and sex (calculated by Growth Analyser). It was assessed sex, age, BMI-SDS and stature-SDS for age and sex, serum levels of glucose, total cholesterol, HDL cholesterol, triglycerides, insulin and leptin in the obese group. In the children control group were obtained BMI-SDS and stature-SDS for age and sex and leptin levels. Data was analysed using SPSS-12.

Results:
The mean age of obese and non-obese children was 10,3±2,94 years old versus 10,9±3,5 years old (p = ns). In the obese group, 32 (45,7%) were boys versus 18 (31,0%) in the non-obese group (p = ns). BMI -SDS in obese group was 3,12±0,60 versus 0,20±0,99 in non-obese group (p<0,001). Leptin levels showed a positive correlation with BMI -SDS (r=0,69; p<0,001) and stature-SDS (r=0,31; p<0,001). When comparing leptin levels between obese and non-obese children group we did not find a significant difference in boys (50,7±27,3 versus 7,0±6,8; p<0,001) or in girls (57,6±25,5 versus 16,5±10,3; p<0,001). In non-obese group, leptin levels were lower in boys. This difference was not seen in the obese group. Leptin showed a positive correlation with insulin resistance index in boys(r=0,45, p=0,05), but not in girls.

Conclusions:
This study has confirmed a positive correlation between leptin levels and BMI-SDS. In obese children elevated leptin is associated with central resistance to its action. The positive correlation of leptin with insulin resistance index may suggest a major role of leptin in insulin resistance.