INTRODUCTION
Chronic autoimmune thyroiditis (CAIT) and Graves’ disease (GD) are the most common autoimmune disorders in children. CAIT leads to hyperthyroidism in most cases due to T cell–mediated cytotoxicity. In contrast, GD and its thyrotropin receptor–stimulating autoantibodies generates hyperthyroidism.

Osteoprotegerin (OPG) is a soluble glycoprotein that belongs to the tumor necrosis factor (TNF) receptor superfamily (TNFRSF11A) and plays an important role in bone homeostasis and in vasculature. It acts as a decoy receptor for the receptor activator of nuclear factor kappa-light-chain-enhancer of activated B cells (RANK) and inhibiting osteoclastogenesis.

OPG is also a decoy receptor for the TNF-related apoptosis inducing ligand (TRAIL). Thus, OPG acts as a potent antiapoptotic factor.

Injury is an important mediator of the inflammatory response and involved in a variety of cellular activities, including cell proliferation, differentiation, and apoptosis.

AIM OF THE STUDY
The aim of this study was to determine the relationship between the concentrations of proinflammatory cytokines IL-18 and OPG with immune factors in the serum of children with autoimmune thyroid disease (AITD).

MATERIAL AND METHODS
1. Studied groups and analyzed markers: 64 children, 3 subgroups: 22 children with hyperT, 22 children with hypot (newly diagnosed patients) and 20 healthy subjects as an euthyroid control.

Summary of the groups and descriptive statistics are presented in Table 1.1.

Table 1. Descriptive statistics and significance of differences - hyperT, hypot and control group (ANOVA – analysis of variance, K-W – Kruskal-Wallis non-parametric test)

RESULTS
1. IL-18 concentrations were significantly higher in CAIT (median: 12.81 pg/ml; 1.67 vs control (1.88 pg/ml; 1.04; p< 0.05) and in CAIT vs GD (1.39 pg/ml; 1.27; p<0.01) (K-W; p=0.025) (Fig. 1).

2. OPG concentrations were significantly higher in children with GD: (mean±SD: 4.48±2.01 pmol/l; ANOVA p=0.013; N-K p<0.01) compared to control group (3.02±1.17 pmol/l), whereas no significant difference between children with CAIT (3.79±1.28 pmol/l) vs control group (N-K p=0.05) and CAIT vs GD (N-K p=0.02) was observed (Fig. 2).

3. In CAIT significant positive correlation between IL-18 and OPG was identified (r=0.44, p<0.05) (Fig. 3).

4. In CAIT, significant positive correlation between IL-18 and ATP0 was identified (r=0.47, p<0.05) (Fig. 4).

5. ROC curve analysis enables determination of usefulness of monitoring cytokine concentrations in order to discriminate children with autoimmune thyroid disease from healthy children:

a) IL-18 discriminated healthy and autoimmune-hypothyroidism (CAIT) children with low sensitivity of 59.1%, but high specificity of 93% (AUC=0.77; p<0.005). Concentrations of this marker increase in hypothyroidism (Fig. 5).

b) Moreover, ROC curve of IL-18 shows good efficacy to discriminate between CAIT and GD children with sensitivity of 72.7% and specificity of 86.4% (AUC=0.77; p=0.003) (Fig. 6).

c) ROC curve of OPG indicates good efficacy to discriminate groups of hyperthyroidism (GD) and healthy children (AUC=0.716; p<0.017) with low sensitivity (54.5%) but high specificity (95%). Concentrations of this marker increase in hyperthyroidism (Fig. 7).

CONCLUSION
We suggest that OPG may serve as a marker of hyperthyroidism (GD) and IL-18 as a marker of hyperthyroidism (CAIT) in children with autoimmune thyroid disease (AITD).