

Cardiovascular risk assessment using serum hs-CRP and Framingham risk score in newly diagnosed Graves' disease patients

Sorina Martin^{1, 2}, Minodora Betivoiu¹, Suzana Florea³, Simona Fica^{1, 2}

1 Elias Hospital, Endocrinology Department

2 Carol Davila University of Medicine and Pharmacy, Endocrinology Department

3 Elias Hospital, Laboratory Department

Bucharest, Romania

Introduction. In hyperthyroid patients mortality is increased by 20%, the major causes of death being cardiovascular disorders. Recent data suggest that subclinical or treated thyroid disease is associated with increased long-term vascular risk despite restoration of euthyroidism.

Methods. We measured high-sensitivity C reactive protein (hs-CRP) in 116 newly diagnosed Graves' disease (GD) patients, without prior antithyroid treatment. Levels of hs-CRP <1mg/L are associated with a low cardiovascular risk, between 1-3mg/L with medium risk and >3mg/L with high risk. We calculated Framingham risk score in 97 patients, using as risk factors: the presence of arterial hypertension, total cholesterol, HDL-cholesterol, age, sex and smoking status. Individuals with Framingham low risk score have ≤10% CHD risk at 10 years, with intermediate risk score 10-20%, and with high risk score ≥20%. Patients < 20 years old, with diabetes mellitus, known cardiac diseases or symptoms were excluded.

Results. The mean value of serum hs-CRP was 4.13±7.71mg/L, median=1.80, IQR=4.59mg/L. Serum hs-CRP median level of 1.80 mg/L is associated with a medium cardiovascular risk. Framingham risk score had a mean value of 2.84±3.58% SD and a median of 1, interval=1-16, IQR=2%. Framingham score placed the majority of patients (91.8%) in a low cardiovascular risk category and only 8.2% in an intermediate risk category, with no patients in the high risk category. Framingham risk score was higher in men compared to women (median=4.50, IQR=11 vs median=1, IQR=2%, p<0.001). Intermediate risk patients were older than patients in the low risk group (64.13±10.30 vs 43.89±13.68 years, p<0.001).

Conclusions. Serum hs-CRP values placed GD patients in a medium cardiovascular risk while Framingham risk score placed the majority of patients in a low risk group, <10% within the next 10 years. Considering the increased morbidity and mortality associated with hyperthyroidism the development of a specific cardiovascular risk score for this specific category of patients could be useful.

Table 1. Cardiometabolic profile in 116 Graves disease patients at diagnosis

Parameter	Value
BMI, mean±SD (kg/m ²)	24.93±5.98
Systolic BP, mean±SD (mmHg)	126.29±19.21
Diastolic BP, mean±SD (mmHg)	73.32±10.54
HR, mean±SD (beats/min)	95.70±17.83
Total cholesterol, mean±SD (mg/dl)	154.64±36.93
HDL cholesterol, mean±SD (mg/dl)	50.62±14.01
LDL cholesterol, mean±SD (mg/dl)	88.44±32.10
Tryglicerides, mean±SD (mg/dl)	101.31±46.79
Smoking status N(%)	
• Never smoker	57(46.00)
• Former smoker	23(18.50)
• Active smoker	44(35.50)
Atrial fibrillation N(%)	13 (10.50)
High blood pressure N(%)	48 (38.70)
Ischemic heart disease N(%)	30 (24.20)
Diabetes mellitus N(%)	9 (7.30)
• Type 1	2 (1.60)
• Type 2	7 (5.60)

Table 2. Inflammation markers

Parameter	Value
ESR, mean±SD (mm/h)	19.22±11.87
Fibrinogen, mean±SD (mg/dl)	360.26±74.95
hs-CRP, median (IQR) (mg/L)	1.80 (4.59)
TNFα, median (IQR) (pg/ml)	7.0 (4.90)

Table 3. Framingham risk score and cardiovascular risk

Parameter	Value
Framingham risk score, median (IQR) (%)	1 (2)
Cardiovascular risk N(%):	
• Low	89 (91.8)
• Intermediate	8 (8.2)
• High	0 (0%)