

MEDICAL CENTER ZAJECAR, YUGOSLAVIA

THYROID FUNCTION IN PATIENTS WITH CORONARY ARTERY DISEASE

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INTRODUCTION

Overt hypothyroidism has long been recognized in association with CAD (1).

Subclinical hypothyroidism (characterized by normal levels of circulating FT4 and FT3 and elevated TSH concentrations) associated with impaired left ventricular diastolic function at rest, systolic dysfunction on effort, and enhanced risk for atherosclerosis and myocardial infarction has only recently been studied in detail (2,3).

Conversely, subclinical hyperthyroidism (characterized by low or undetectable serum TSH, and normal FT4 and FT3 concentrations) is associated with increased heart rate, atrial arrhythmias, increased left ventricular mass with marginal concentric remodeling, impaired ventricular relaxation, reduced exercise performance, and increased risk for cardiovascular death (4-6).

Epidemiological studies have shown the high prevalence of subclinical thyroid dysfunction in the general population (7-9).

In elderly persons, subclinical hypothyroidism is associated with increased risk for atherosclerosis and coronary artery disease (8), whereas subclinical hyperthyroidism is associated with increased mortality from all causes, but especially from cardiovascular disease (9)

Nevertheless, thyroid function tests are not included in routine cardiac testing.

PATIENTS

102 patients (63 m, 39 f, age 37-77) referred for:

- Perfusion scintigraphy of myocardium ^{99m}Tc MIBI dipyridamol stress-rest test, 2 day pr *Dipyridamole stress*: Dipyridamole (Persantin^R – Zdravlje Leskovac) containing 10 mg of the agent was diluted by 20 ml of normal saline solution. A standard dose of intravenous dipyridamole of 0,14 mg/kg/min was administered for 4 minutes. Heart rate and blood pressure were monitored all the time. Aminophylline was administrated only to reverse serious side effects.

^{99m}Tc MIBI Gated SPECT Myocardial Perfusion Imaging: All patients underwent a two-day stress-rest ^{99m}Tc MIBI imaging protocol, Figure 1 (1). Poststress imaging was performed after the intravenous injection of 1110 MBq (30 mCi) ^{99m}Tc MIBI in pick after the infusion of dipyridamole was completed. Rest imaging was performed next day with 1110 MBq (30 mCi) ^{99m}Tc MIBI. Stress and rest imaging were performed 60 minutes after the injection of ^{99m}Tc MIBI. Single photon emission computed tomography (SPECT) myocardial imaging was completed with a Siemens Open Diacam Single Headed Gamma Camera. Thirty-two

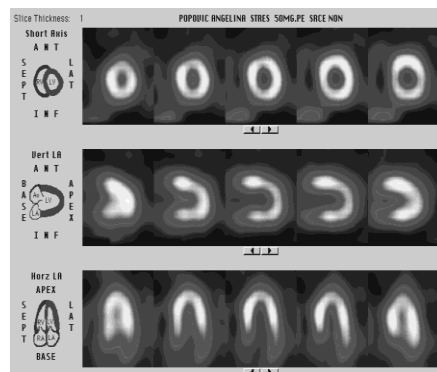
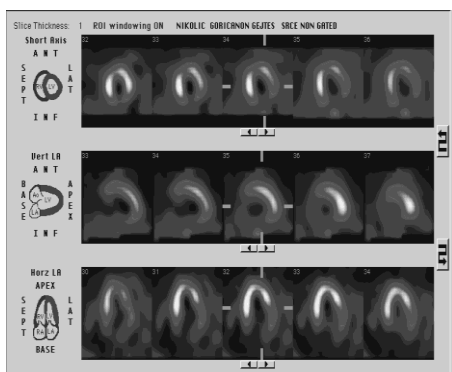
projections were acquired in a step and shoot format with 30 seconds per stop over a 180° semicircular orbit. All images were stored in a 64x64 computed matrix.

- Routine lipidogram and
- Thyroid function tests : us TSH, FT4 (DELFIA WALLAC) , TgAb

Based on findings of perfusion scintigraphy of myocardium 2 groups were formed :

A - "POSITIVE" findings group

B - "NORMAL" findings group

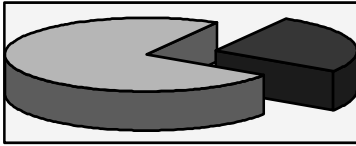


THYROID FUNCTION TESTS RESULTS

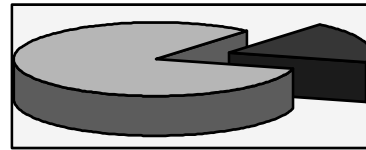
THYROID TEST	"POSITIVE" (%)	"NORMAL" (%)
TSH<0.1	6	0
TSH>2<5	14.7	12.5
TSH>5	6	6
TgAb	15	9.5

"ABNORMAL" THYROID FUNCTION	"POSITIVE" (%)	"NORMAL" (%)
	27	19

THYROID TESTS IN POSITIVE GROUP



THYROID TESTS IN NEGATIVE GROUP



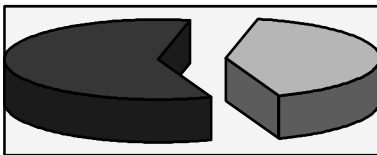
■ ABNORMAL □ NORMAL

LIPID STATUS RESULTS

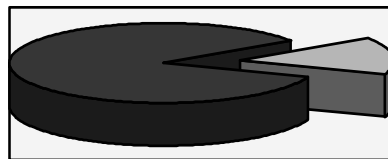
TEST	"POSITIVE" (%)	"NORMAL" (%)
TCHOL > 5 mmol/l	59	85
TRIG > 2 mmol/l	26	41
TRIG < 1 mmol/l	83	76
LDL > 3,5 mmol/l	52	81

BMI	"POSITIVE" (%)	"NORMAL" (%)
> 25	82	70,5
> 27	79	47

LIPID TESTS IN POSITIVE GROUP



LIPID TESTS IN NEGATIVE GROUP



■ ABNORMAL □ NORMAL

DISCUSSION

According to epidemiological studies, high prevalence of thyroid disorders is expected in woman from older age group (8).

Our group of investigated patients had male to female ratio of 63/39 and average age of ~ 52 years. Nevertheless "abnormal" (overt and subclinical) thyroid function test results were found in over 20% of investigated patients.

“ POSITIVE” and “NEGATIVE” groups were formed on bases of perfusion scintigraphy of myocardium findings and are not conclusively correlated with clinical cardiology findings. This pilot study supports requirement for supplementary investigation of thyroid function in patients with coronary artery disease.

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ETA meeting, Edinburgh 2003,