Tyumen Cardiology Center

111, Melnikaite Str.,
625026, Tyumen, Russian Federation

+7 3452 207608,
fax. +7 3452 205349
e-mail: kuznets@cardio.tmn.ru

www.infarkta.net

Can hypothyroidism manifest as ischemic heart disease in elderly patients with the absence of significant coronary atherosclerosis?

E.I. Yaroslavskaya, V.A. Kuznetsov, V.M. Parato*, D.V. Krinochkin, G.S. Pushkarev, G.V. Kolunin, E.A. Gorbatenko, M.V. Varshavchik

* - Cardiology Unit of Emergency Department – Madonna del Soccorso Hospital and Politecnica delle Marche University, Sun Benedetto del Tornto, Marche Region, Italy

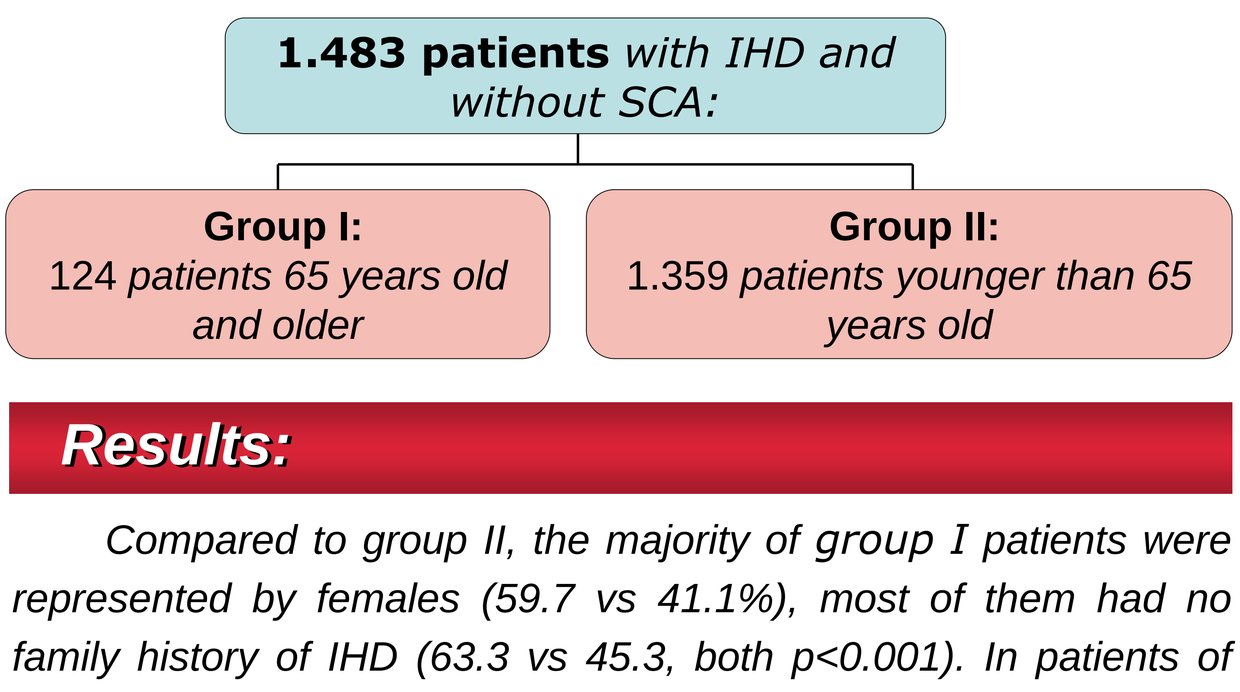
In elderly patients with symptoms of ischemic heart disease (IHD), coronary angiography often fails to reveal significant atherosclerosis. The causes of the absence of significant coronary atherosclerosis (SCA) in these patients have not been determined.

Purpose:

To reveal predictors of SCA absence in the elderly patients with IHD signs and symptoms.

Methods:

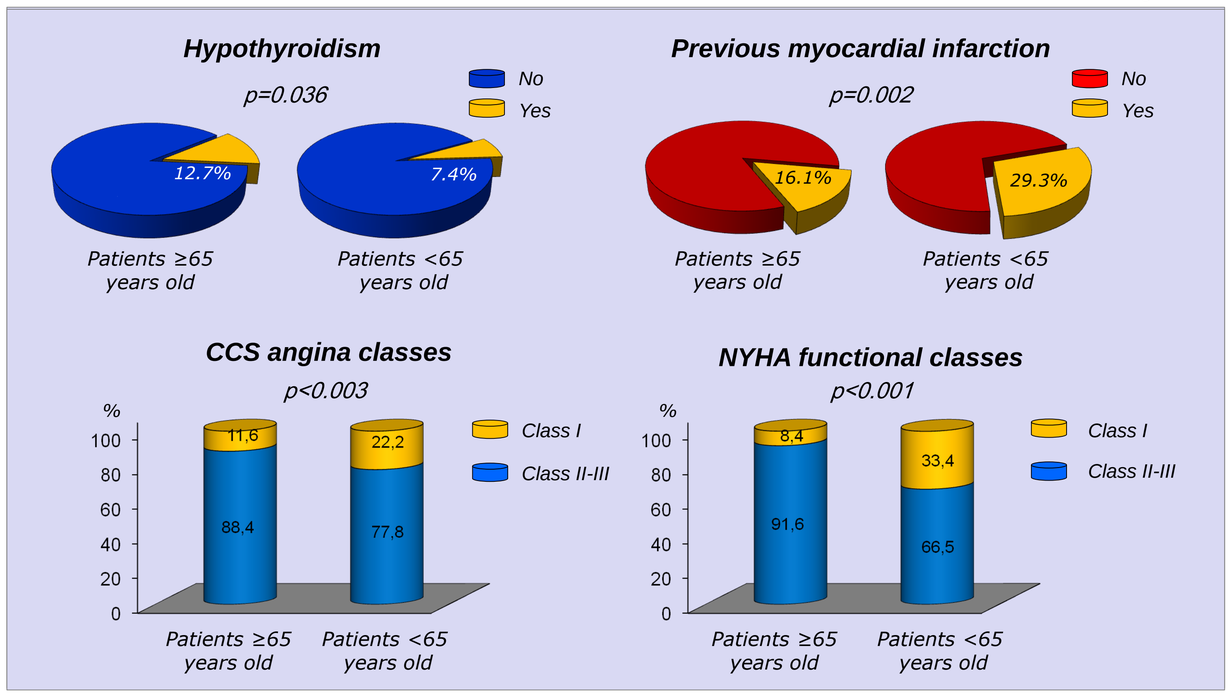
This is a retrospective study of consecutive 10.713 patients who underwent coronary angiography at the Tyumen Cardiology Centre in 1991-2012. We selected 1.483 patients with IHD and without SCA: 124 patients 65 years old and older (group I) and 1.359 patients younger than 65 years (group II). All the patients undergone resting electrocardiography and echocardiography, holter monitoring. The diagnosis of IHD was based on typical clinical manifestations, positive stress tests (exercise stress test by bicycle/treadmill or transesophageal pacing, dobutamine or transesophageal pacing stress echocardiography, myocardial scintigraphy) and history of myocardial infarction (MI).



Results:

Compared to group II, the majority of group I patients were represented by females (59.7 vs 41.1%), most of them had no family history of IHD (63.3 vs 45.3, both p<0.001). In patients of group I NYHA functional classes II and III were more frequent compared to group II as well as Canadian Cardiovascular Society angina classes II and III (Figuer 1).

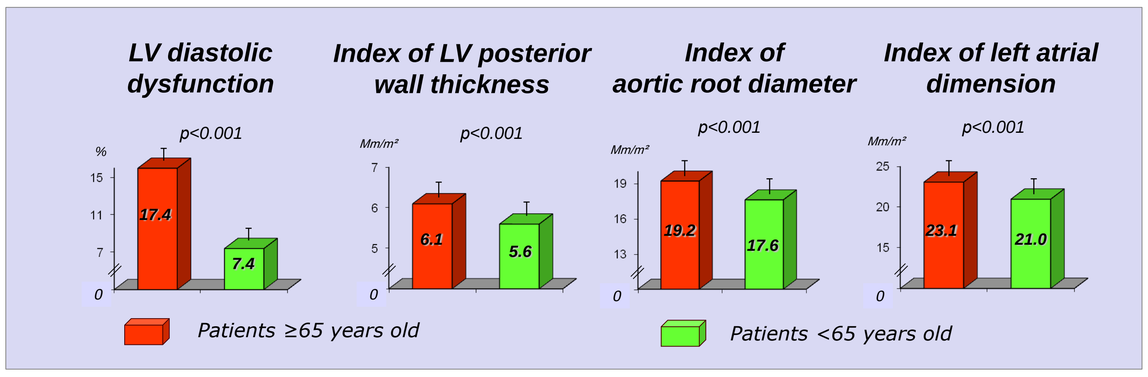
Figure 1



The incidence of hypothyroidism was higher and incidence of previous MI was lower in group I (Figuer 1).

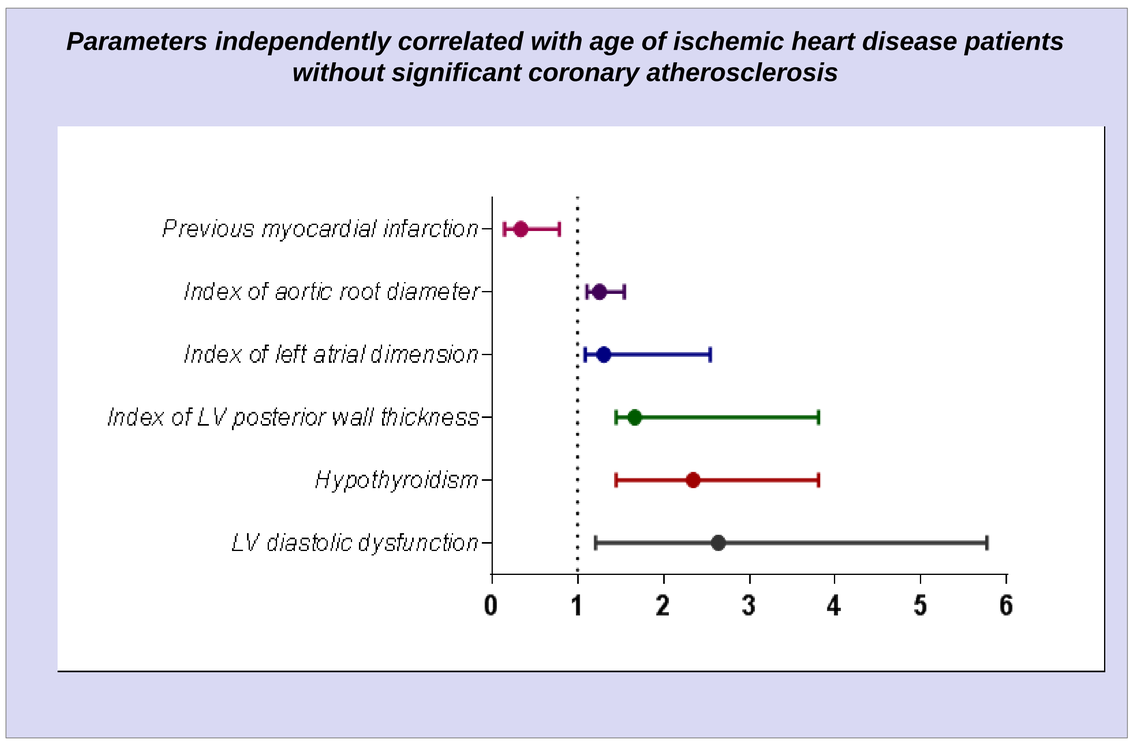
Echocardiographic indices of left ventricular (LV) posterior wall thickness, aortic root diameter and left atrial dimension were higher in group I patients (Figuer 2). LV diastolic dysfunction and aortic stenosis (8.2 vs 2.7%, p<0.001) were more frequent in patients of group I.

Figure 2



According to the results of multivariate analysis LV diastolic dysfunction (OR=2.64; CI 1.21-5.77; p=0.001), hypothyroidism (OR=2.35; CI 1.45-3.81; p=0.015), increased indices of LV posterior wall thickness (OR=1.67; CI 1.45-3.81; p=0.019), left atrium (OR=1.31; CI 1.09-2.55; p=0.002), aortic root (OR=1.26; CI 1.11-1.55; p=0.006) and the absence of prior MI (OR=0.34; CI 0.15-0.79; p=0.011) were independent predictors of the SCA absence in elderly patients with IHD (Figuer 3).

Figure 3



Hypothyroidism may accelerate the progression of IHD through various mechanisms, such as dyslipidemia, systemic inflammation, hypercoagulability and endothelial dysfunction. Bur hypothyroidism as IHD risk factor may be linked also with abnormalities of the myocardial microcirculation. It is known that hypothyroid patients have impaired coronary microvascular function which improved after L-thyroxine therapy. Our hypothesis is that clinical manifestations of IHD in the most of elderly patients without SCA are determined by abnormalities of the myocardial microcirculation. These abnormalities cannot be visualized by coronary angiography.

Conclusions:

Hypothyroidism was strong independent predictor of the SCA absence in elderly IHD patients. Probably in elderly patients without SCA hypothyroidism could manifest clinically as IHD through microvascular myocardial dysfunction.