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 underwent 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).

1,483 patients with IHD and without SCA:

- **Group I:** 124 patients 65 years old and older
- **Group II:** 1,359 patients younger than 65 years old

**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 (Figure 1).

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 (Figure 3).

Hypothyroidism may accelerate the progression of IHD through various mechanisms, such as dyslipidemia, systemic inflammation, hypercoagulability and endothelial dysfunction. But 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.