BACKGROUD

Cardiovascular diseases are the leading disorders in the developing societies. People of high cardiovascular risk are not always easy to identify and their further diagnostic work-up and treatment appears complex and challenging. Patients with symptoms of cardiovascular origin constitute a heterogenous group and regardless of detailed guidelines and precise noninvasive examinations and invasive procedures there are still patients who have normal coronary angiography despite of persisting typical chest pain. Therefore such group of patients presents diagnostic, therapeutic and prognostic problem.

AIMS

1. The assessment of clinical and biochemical parameters in 2 groups of subjects: patients with insignificant atherosclerotic lesions and patients with normal coronary arteries referred to the Department of Invasive Cardiology with symptoms of stable angina pectoris.

2. The analysis of patients with normal coronary arteries including noninvasive procedures performed during diagnostic work-up for invasive procedures with a 2-year follow-up of subjective assessment of health status.

3. The assessment of early and long-term prognosis of patients with normal coronary arteries and the direct cause of death according to ICD 10.

METHODS

Medical records of 9150 patients hospitalized in the Department of Invasive Cardiology of the Medical University of Bialystok between 2008-2010 were evaluated. The I stage of analysis covered 1100 people without significant atherosclerotic lesions. Cardiovascular risk factors were compared between patients with absolutely normal coronary arteries and non-significant lesions. The II stage of analysis covered the analysis of 296 patients with normal coronary arteries and symptoms of stable angina pectoris (n=262) and acute coronary syndrome (n=34). The analysis focused on the juxtaposition of risk factors, symptoms, noninvasive examinations performed during qualifications for invasive diagnostics. The III stage was a 2-year follow-up assessing subjective health status of patients. The IV stage of the study was evaluation of early and long-term prognosis of patients upon data obtained from the Ministry of Digital Affairs at 28.11.2018 and the identification of the direct cause of death (on the basis

of ICD 10 classification) with the help of Statistical Office in Olsztyn. The study was approved by Local Bioethics Committee (R-I-002/298/2011).

RESULTS

9150 patients underwent coronarography between 2008-2010. In the I stage of the study 1100 patients referred with symptoms of stable angina pectoris and non-significant lesions in coronary arteries were selected. These patients were divided into 2 groups: with insignificant coronary lesions (n=632) and without lesions (n=478) referred to as normal coronary arteries.

Patients with normal coronary arteries were younger 59.63 vs. 64.92 years (p<0.001), more often female (63.6% vs. 52%), had higher HDL- C (p<0.001), lower TG (p=0.003) and lower fibrinogen concentration (p=0.01). Patients with insignificant coronary lesions more often had hypertension (p<0.001), hyperlipidemia (p=0.03), every fifth patient had diabetes (p=0.02) and chronic kidney failure (p=0.002), they more often had a history of stroke or TIA (p<0.001). Multivariate regression analysis (Wald test) showed that the probability of normal coronary arteries was lower with every 10 years. Normal coronarography was 2.5 times more probable in those with COPD, 1.7 times in patients with AF. The increase of HDL cholesterol with every 1 mg/l was connected with 16% increase of normal coronary arteries probability, the OR was 1.87 with the increase of BMI of 10kg/m2.

In the II stage of the study we selected 296 subjects with normal coronary arteries referred for the invasive diagnostics of coronary heart disease. Almost 70% of the group were females who were significantly older than men (p<0.001). The most prevalent risk factor was hypertension (78%), hyperlipidemia (56%) and family history (49%). We assessed PTP –all women and 92% of men had moderate risk, 8% of men had high risk. No patients had low risk. Patients who underwent exercise treadmill test had DTS calculated. 88% men and 67% of women were in the group of moderate mortality rate (p<0.005). High mortality rate affected 31% of women and 19% of men. 34 patients were diagnosed with acute coronary syndrome. Patient with symptoms of stable IHD were younger, with the prevalence of women, more patients had hypertension (p=0.01) and family history (p<0.01) in comparison to patients with ACS. Patients with ACS had significantly higher LDL concentration (p=0.01) and lower HDL concentration (p=0.01). Patients with ACS had higher fibrinogen concentration (p=0.0004). The most common cause of ischaemic symptoms was vasospastic angina (5,41%), 3,04% of patients had slow flow phenomenon, 2,7% myocardial bridging, 1,35% takotsubo syndrome. 2-year follow-up questionnaire was completed by 254 subjects

(no response from 42 people). 144 patients felt better 2 years after coronarography (48,6%), 13 patients felt worse (4,4%). 48 subjects were diagnosed with a new disease (16,21%), including 4 cancer diagnosis. During 10-year follow-up 21 people died (7.1%). 6 patients (17.64%) were from ACS group (n=34), 15 subjects (5.7%) were referred as stable IHD (n=262). In 10-year follow-up over a half of deaths constituted cancers (11 out of 21 patients, 52%, yet 3 causes of death remain unknown). Patients who died were older, had higher PTP, more often AF, and in 2-year follow-up their subjective health status assessment was worse than before the hospitalization.

CONCLUSIONS

1. Among patients with symptoms of stable coronary heart disease referred for coronarography every third person did not present with significant atherosclerotic lesions, whereas the number of patients with ACS was scarce.

2. Patients with insignificant atherosclerotic lesions had worse metabolic profile – more risk factors comparing to patients with normal coronary arteries. The probability of normal coronary arteries was higher in patients with COPD, AF, those who had higher HDL-C concentration and higher BMI.

3. ACS patients constituted a heterogenous group: the subjects were mostly men, they were older and had worse lipid profile comparing to patients with symptoms of stable IHD and normal coronary arteries.

4. Almost half of the patients with normal coronary arteries reported better subjective health status 2 years after coronarography.

5. 10-year follow-up of patients with normal coronary arteries and symptoms of stable coronary heart disease presented good prognosis. The number of death was 3 times higher among patients with ACS.