Multimorbidity and outcomes in patients with history of stroke: data of outpatient registry REGION

MM. Lukiyanov[1], OM. Drapkina[1], SY. Martsevich[1], EY. Okshina[1], SS. Yakushin[2], AN. Vorobyev[2], AV. Zagrebelnyy[1], AN. Kozminsky[2], KA. Moseichuk[2], KG. Pereverzeva[2], EA. Pravkina[2], EY. Andreenko, VG. Klyashtorny, EV. Kudryashov[1], SA. Boytsov[3]

National Medical Research Center for Preventive Medicine, Moscow, Russia
[2] Ryazan State Medical University, Ryazan, Russia
[3] National Medical Research Center for Cardiology, Moscow, Russia

Aim. To evaluate multimorbidity, outcomes, risk of all cause mortality (MTot), cardiovascular mortality (CVM) in registry of patients with history of stroke (HStr).

Methods. 986 patients with HStr (age 70.6±10.9; 57% women) were enrolled in the outpatient REGION registry. End points and the mean number of cardiovascular diseases (CVD), nonCVD were estimated.

Results 826 (83.8%) of patients had cardiovascular (CV) multimorbidity. The number of CVD, nonCVD was 2.6±0.8 and 1.7±0.5. During follow-up (2.9±0.7 years) 308 (31.2%) patients died, including 242 (24.5%) from CVD. The next factors were significant for increasing risk of MTot and CVM: age – 1.10 (1.09-1.12) and 1.11 (1.09-1.13); gender (men): 2.01 (1.55-2.62) and 1.86 (1.38-2.50); AF: 1.43 (1.09-1.86) and 1.55 (1.15-2.09); chronic obstructive pulmonary disease (COPD): 1.90 (1.34-1.63) and 1.89 (1.28-2.79); history of stroke: 1.64 (1.23-2.19) and 1.92 (1.40-2.63); diabetes 1.56 (1.16-2.08) and 1.43 (1.01-2.03) and history of MI: 1.45 (1.09-1.93) and 1.20 (0.85-1.69; p=0.30); heart rate>80/min: 1.51 (1.13-2.03) and 1.63 (1.18-2.25); no antihypertensive treatment (AHT): 2.03 (1.42-2.88) and 1.94 (1.30-2.89); low Hb: 2.44 (1.58-3.79) and 2.44 (1.49-4.00); These drugs were significant for decreasing risk of MTot and CVM: ACE inhibitors (ACEI)- 0.60 (0.42-0.85) and 0.62 (0.42-0.93); angiotensin receptor blockers (ARB): 0.26 (0.14-0.50) and 0.27 (0.13-0.55); statins: 0.71 (0.51-0.98) and 0.52 (0.35-0.76); beta-blockers (MTot) 0.71 (0.50-0.99).

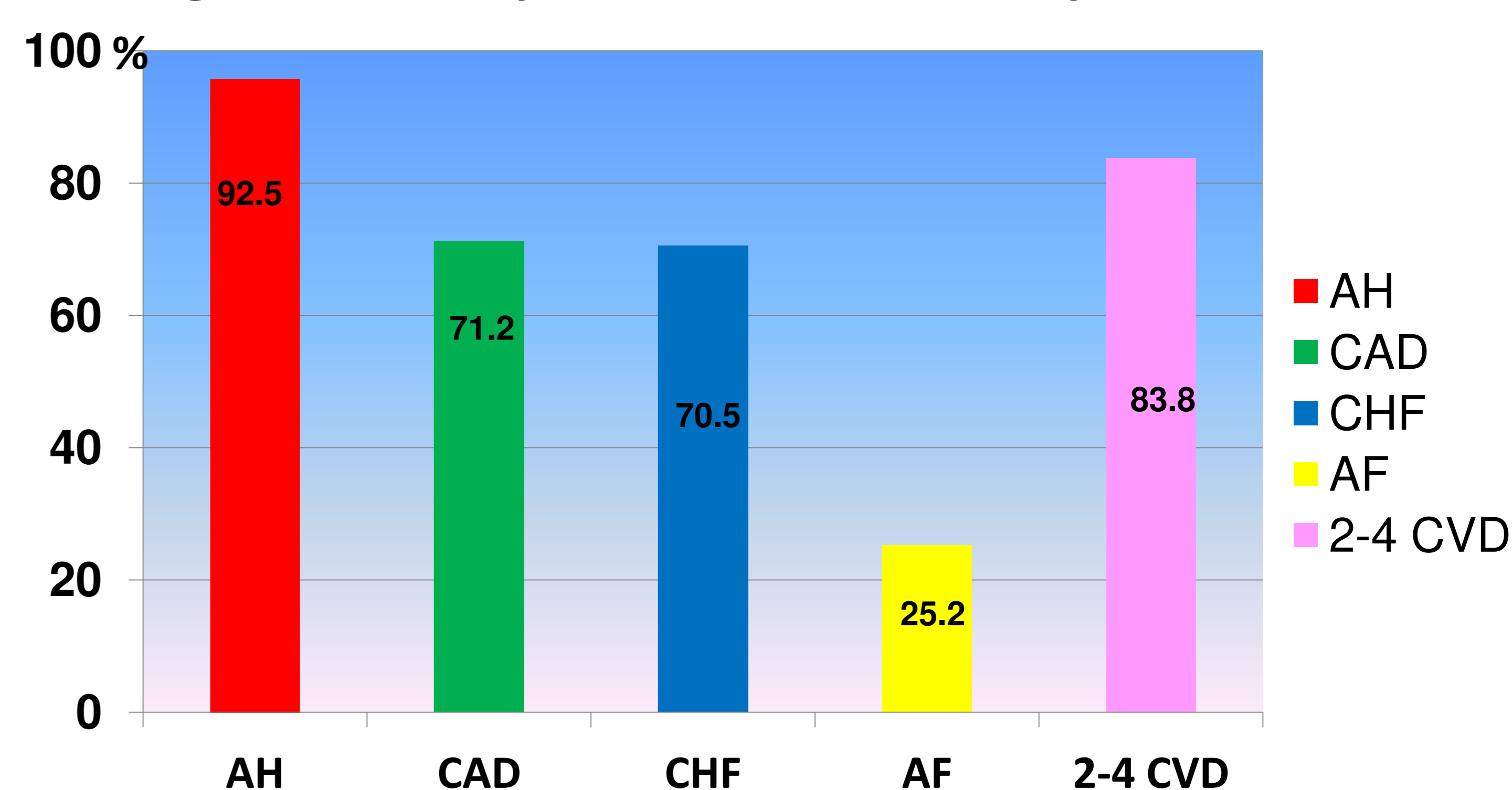## Fig. 1. CVD in patients with history of stroke

Table 1. Drug treatment of CVD in patients with history of stroke

ACE inhibitors (ACEI)	30.6%
Angiotensin receptor blockers (ARB)	10.0%
Beta-blockers	20.6%
Statins	13.8%
Antiplatelets	31.3%
Anticoagulants	3.2%
Calcium channel blockers	14.2%
Diuretics	26.4%

Table 2. Outcomes during 3-year follow –up period

All cause mortality, n (%)	308 (31.2%)
CV mortality, n(%)	242 (24.5%)
Non-fatal stroke, n (%)	43 (4.4%)
Non-fatal MI, n (%)	16 (1.6%)

Table 3. Factors that are significant for prognosis in patients with history of stroke

Factors	CV mortality (HR and 95%CI)	Total mortality (HR and 95%CI)
Age (for 1 year)	1.11 (1.09-1.13)	1.10 (1.09-1.12)
Gender (men)	1.86 (1.38-2.50)	2.01 (1.55-2.62)
Heart rate > 80/min	1.63 (1.18-2.25)	1.51 (1.13-2.03)
Atrial fibrillation	1.55 (1.15-2.09)	1.43 (1.09-1.86)
History of MI	[1.20 (0.85-1.69), p=0.30]	1.45 (1.09-1.93)
History of recurrent stroke	1.92 (1.40-2.63)	1.64 (1.23-2.19)
Chronic obstructive pulmonary disease	1.89 (1.28-2.79)	1.90 (1.34-1.63)
No antihypertensive treatment for AH	1.94 (1.30-2.89)	2.03 (1.42-2.88)
Diabetes	1.43 (1.01-2.03)	1.56 (1.16-2.08)
Low Hb (< 120 g/l for women and < 130 g/l for men)	2.44 (1.49-4.00)	2.44 (1.58-3.79)
ACEI	0.62 (0.42-0.93)	0.60 (0.42-0.93)
ARB	0.27 (0.13-0.55)	0.26 (0.14-0.50)
Statins	0.52 (0.35-0.76)	0.71 (0.51-0.98)
Beta-blockers	0.75 (0.51-0.99)	0.71 (0.50-0.99)

Conclusions. The most of patients with history of stroke had cardiovascular multimorbidity. Average number of cardiovascular and non-cardiovascular diseases was 4.3. The risk of all cause and cardiovascular mortality was higher in patients with AF, COPD, history of recurrent stroke, heart rate>80/min, low Hb, no AHT. The risk of only all cause mortality was higher in patients with history of myocardial infarction. The administration of ACEI, ARB, beta-blockers and statins was associated with 1.4–3.8 times less risk of all cause and cardiovascular mortality.

Contact e-mail: loukmed@gmail.com

Disclosure: none