



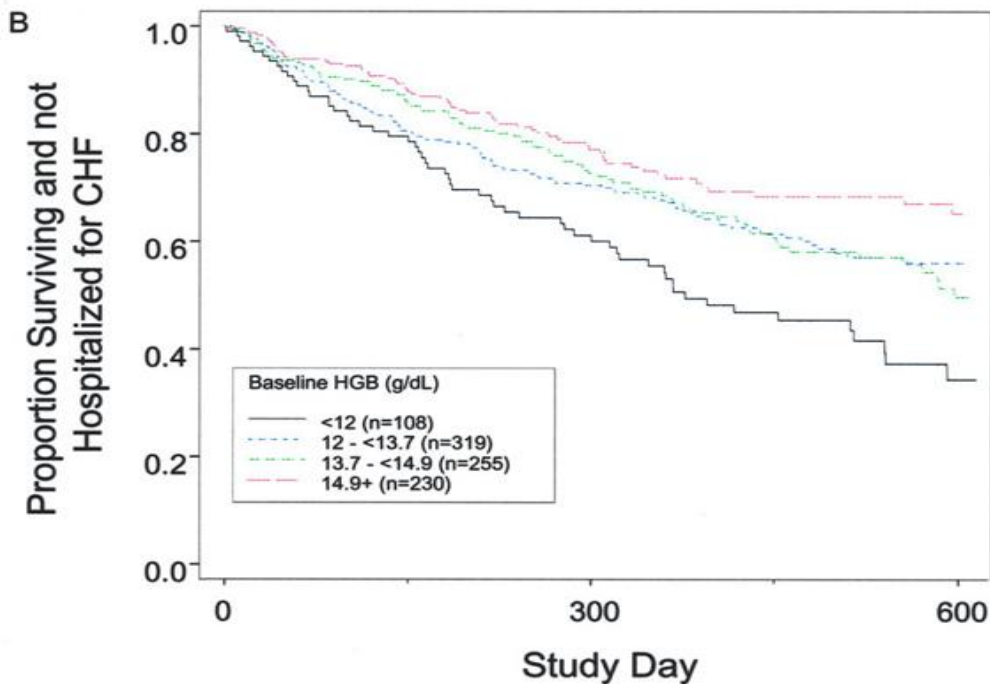
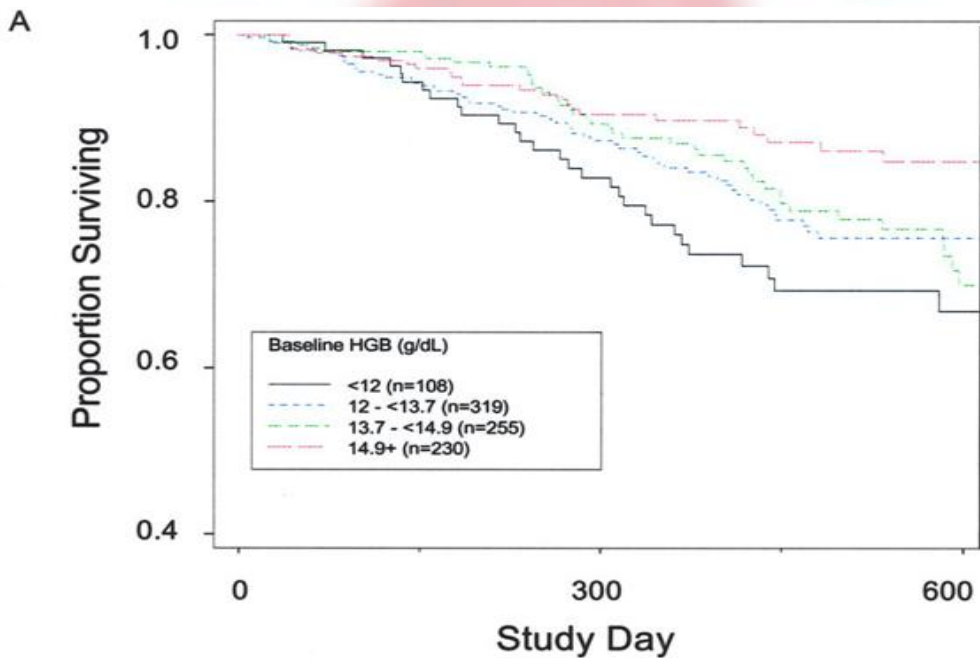
**FSBI, National Medical Research Center for Cardiovascular Surgery n.a. A. N. Bakulev,
Ministry of Health of the Russian Federation
Conference with international participation
'The First Russian Iron Academy'**



Anemia as a risk factor in cardiac surgery patients with cardiopulmonary bypass

Khicheva G.A. Kuksina E.V.

Moscow 2020



Anand I., McMurray J.J.V., Whitmore J., Warren M., Pham A., McCamish M.A., Burton P.B.J.

Anemia and Its Relationship to Clinical Outcome in Heart Failure

Hemoglobin concentration is an independent risk factor for poor outcomes: lower hemoglobin concentrations are associated with higher rates of hospitalization and mortality

(Circulation. 2004;110:149-154)

Purpose of the study:

to determine of the influence of preoperative anemia on unfavorable outcomes in patients who underwent CABG and heart valves surgery under cardiopulmonary bypass.

Materials and methods

The study included consecutive patients who in 2019 underwent coronary artery bypass grafting and heart valve surgery under cardiopulmonary bypass.

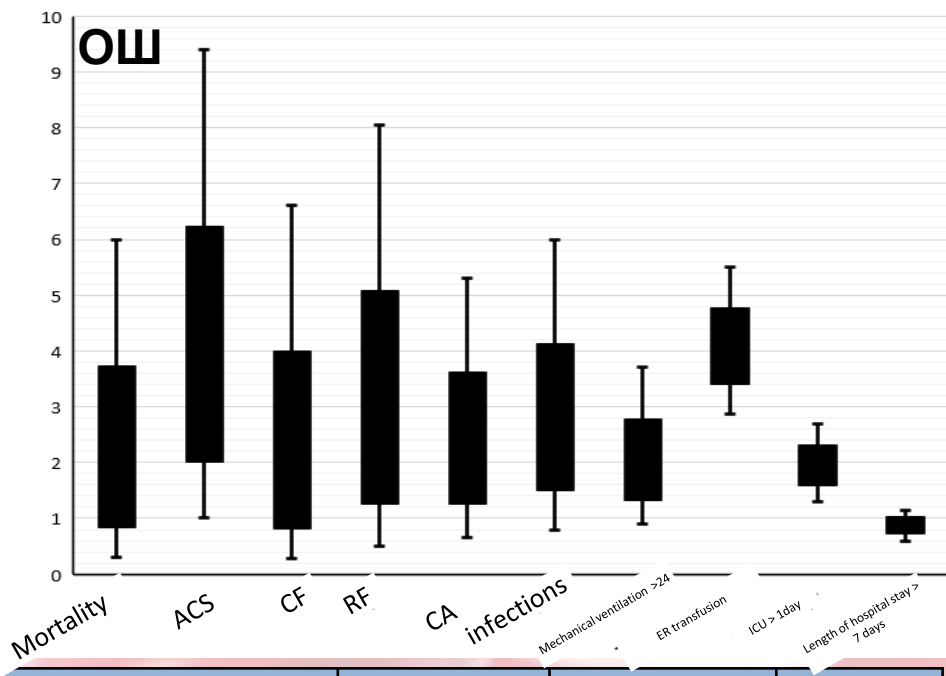
Preoperative parameters of 160 patients after primary replacement/repair of heart valves and of 196 patients after CABG were analyzed.

Criteria for anemia: men - hemoglobin concentration below 130 g / l, women - hemoglobin concentration below 120 g / l.

Univariate binary logistic analysis was performed to predict the risk of anemia.

Anemia as a risk factor for CABG

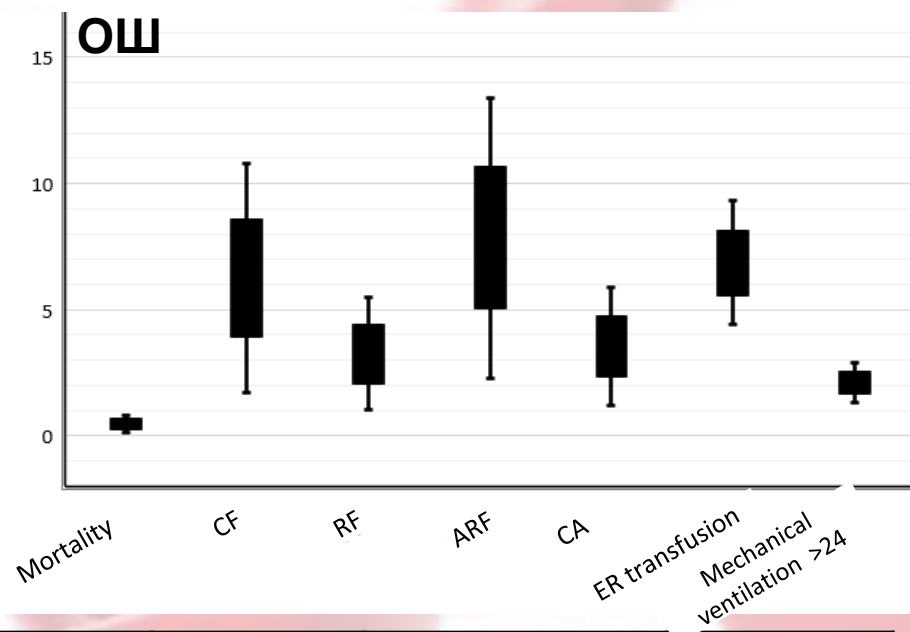
Preoperative anemia is a predictor of postoperative acute coronary syndrome, prolonged ICU stay, and the need for transfusions of erythrocyte-containing blood products.



Predicted parameters	OR	95% CI	p
Mortality	1.4	0.3-6	0.7
Acute coronary syndrome	3.04	1-9.4	0.05
Cardiac failure	1.37	0.3-6.6	0.7
Respiratory failure	2.07	0.5-8.05	0.3
Acute kidney injury	1.6	0.2-15.4	0.7
Neurological complications	1.9	0.7-5.3	0.24
Infectious complications	2.25	0.8-5.98	0.1
ER transfusion	3.99	2.9-5.5	0.0001
Mechanical ventilation > 24	1.8	0.9-3.7	0.1
ICU > 1 day	1.9	1.3-2.7	0.0001
Length of hospital stay > 7 days	1.15	0.6-2.2	0.7

Anemia as a risk factor for treatment of acquired heart valve defects

Preoperative anemia is a predictor of mortality, cardiac, respiratory, renal failure, prolonged mechanical ventilation, and neurological complications.



Predicted parameters	OR	95% CI	p
Mortality	2.86	1.23-6.67	0.014
Acute coronary syndrome	2.9	0.19-48	0.44
Cardiac failure	4.3	1.7-10.8	0.002
Respiratory failure	2.3	1.01-5.5	0.045
Acute kidney injury	5.6	2.3-13.4	0.0001
Neurological complications	2.6	1.2-5.9	0.022
Infectious complications	1.8	0.8-3.99	0.152
Thromboses	3.01	0.6-15	0.179
ER transfusion	6.3	4.4-9.3	0.0001
Mechanical ventilation > 24	1.9	1.3-2.9	0.003
ICU > 1 day	1.2	0.9-1.7	0.2
Length of hospital stay > 7 day	0.6	0.2-1.5	0.25

Conclusions

1. Baseline anemia in patients with coronary artery disease increases the risk of acute coronary syndrome **BY A FACTOR OF 3**, increases the risk of transfusions of erythrocyte-containing blood components **BY A FACTOR OF 4**; the need for prolonged intensive care after CABG under the conditions of ICU **BY A FACTOR OF 2**.
2. Baseline anemia in patients with heart valves disease increases the risk of acute kidney injury **BY A FACTOR OF 5**, the risk of heart failure **BY A FACTOR OF 4**, the risk of mortality **BY A FACTOR OF 3**, the risk of neurological complications, respiratory failure and the need for prolonged mechanical ventilation after surgical interventions under cardiopulmonary bypass **BY A FACTOR OF 2**.