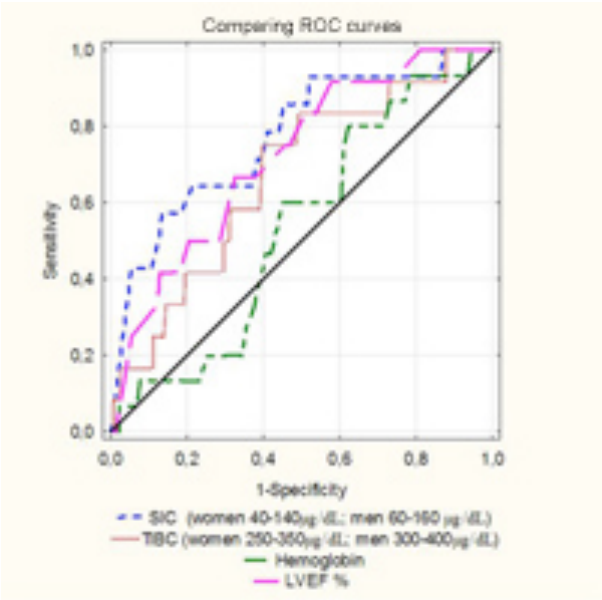
Parameters of the iron homeostasis rather than anemia are better indicators of prognosis in critically ill cardiac patients.

Background: Anemia is a common finding in critically ill patients. However, the relationship between the abnormalities in iron metabolism and the adverse outcome in a general population of patients admitted to Cardiac Intensive Care Unit (CICU) is unclear and has never been evaluated in this population.

Aim: The predictive value of serum iron concentrations (SIC) and total iron binding capacity (TIBC) as an indirect measure of transferrin in critically ill patients in comparison to the clinical risk factors, echocardiographic parameters and laboratory findings, particularly anemia, was provided.

Methods and Results: 392 critically ill patients (mean age 70 years, 43% women) admitted to CICU were prospectively analyzed. 168 patients were admitted due to acute coronary syndrome (ACS), 122 with symptoms of acute heart failure (AHF), and 102 with other acute cardiac disorders (including aortic dissection and pulmonary embolism). During 7.9 (±5.1) days of hospitalization 15 (3.8%) patients died (altogether 12 patients in ACS and AHF groups). According to the WHO definition anemia was present in 64% of patients. Mean baseline hemoglobin (Hb) level was 11.8 g/dL (±2.2), SIC − 44.0 µg/dL (±38.9), and TIBC – 268 µg/dL (±75.1). In univariate analysis 4th NYHA class, CRP, SIC, TIBC, and left ventricle ejection fraction (LVEF) were related to mortality ($p<0.05$), while in multivariate analysis CRP, SIC, TIBC, and LVEF remained significant. The largest area under the ROC curve (AUC) was found for SIC – 0.77 (95% confidence interval [C.I.] 0.638 to 0.902), LVEF – 0.72 (95% C.I. 0.587 to 0.853), TIBC – 0.67 (95% C.I. 0.521 to 0.819), as compared to Hb – 0.535 (95% C.I. 0.407 to 0.662), figure.

Conclusions: In a heterogenous group of patients with life-threatening cardiac illnesses, among the variety of parameters being assessed at admission CRP, SIC, TIBC and LVEF, but not anemia, are independent markers of in-hospital mortality.


Comparing ROC curves
Sensitivity
1-Specificity
0.0
0.2
0.4
0.6
0.8
1.0
SIC (women 40-140µg/dL; men 60-160 µg/dL)
TIBC (women 250-350µg/dL; men 300-400µg/dL)
Hemoglobin
LVEF %