

Anemia, renal impairment and in-hospital mortality, in acute worsening chronic heart failure patients

Aim of the study: To analyze the impact of anemia and renal impairment on in-hospital mortality(IHD), in patients with acute worsening chronic heart failure.

Methods:232 randomly selected patients with symptoms of HF were retrospectively analyzed. Analyzed variables: gender, age, risk factors and co-morbidities: HTA, HLP, DM, COPD, CAD, PVD, CVD, anemia(defined as Hgb \leq 10mg/dl), renal failure. Measured variables: systolic and diastolic BP, Hgb, sodium, BUN, creatinine, length of hospital stay and IHD. Comparative analysis was performed between patients with in-hospital mortality(IHD) and survivors, as a function of anemia and renal impairment. Statistical analysis: descriptive and comparative analysis, t-test, Chi square, univariate (binary logistic and linear regression and multivariate linear regression(stepwise backward)).

Results:Mean age 69.6 ± 11.4 , 102(44%)females and 130(56%) males, with females being significantly older 72.6 ± 12.5 vs. 67.7 ± 10.2 ($p=0.002$), with significantly higher SBP, DBP and sodium level ($p=0.003$; 0.002 and 0.028 respectively), and males having HTA more often OR 1.3; $p=0.017$. Mean hospital stay was 6.8 ± 5.8 days, with significant difference between IHD and non IHD group(7.9 ± 4.5 vs. 3.8 ± 7.9 ; $p=0.000$), with the highest mortality during the first (37.3%) and second hospital day (44.1%). 44 pts.(19%) had anemia, 31(13.4%) had known Chronic Renal Failure(CRF), and 59(25.4%) had IHD. Anemia was significantly associated with IHD (Chi square 6,36, sig 0.012, Exp B 2.48, sig 0.010), meaning pts. with anemia had 2,5 times greater risk for IHD. CRF per se, was not associated with IHD. Univariate linear regression identified creatinine(R square .032, beta .180, sig 0.006), and BUN(R square .034, beta .184, sig 0.005), as predictors of IHD. Multivariate stepwise regression model(anemia, HRF, Hgb, BUN, creatinine, sodium) at step 3(mean square .799, sig 0.002), identified two independent predictors Hgb(beta -.148, sig 0.028), and BUN(beta .163, sig 0.055). Multivariate model that included other known predictors of IHD(EF%, SBP, DBP, HRF, CAD, anemia, Hgb, BUN, creatinine, sodium) at step 8(mean square 1.537, sig 0.000), identified four independent predictors: EF%(beta -.204, sig 0.002), SBP(beta -.130, sig 0.052) as markers of systolic dysfunction and again anemia(Exp B 2.2.06, sig 0.041), and BUN(beta .200, sig 0.002).

Conclusion:Anemia and renal impairment are well known comorbidities associated with HF that have great impact on course of HF. We confirmed that anemia and BUN, are significantly independent predictors of in hospital mortality in acute worsening CHF.