UNIVERSITY OF MEDICINE AND PHARMACY OF TÂRGU-MUREŞ
SCHOOL OF DOCTORAL STUDIES

NEGATIVE PROGNOSTIC FACTORS IN HEART FAILURE

ABSTRACT

Scientific Advisor:
Prof. Dr. Carașca Emilian

Ph.D. Candidate:
Baricz Emőke

Introduction:

Despite therapeutical progresses, hospitalized patients for acute heart failure syndromes (AHFS) have a high rate of in-hospital mortality rate. The capacity of quantifying the individual risk of patient is essential for therapeutical decision making and patient management during hospitalization.

This study addresses to those who wish to know in details the typology of patients presenting to emergency room with AHFS and also to emphasize the possibilities and modalities of improving the patient management quality with this pathology.

The aim of this study:

The aim of this study is to emphasize three aspects – the main characteristics of this complex clinical syndrome, the negative prognostic factors and the level of adherence of clinicians to the guidelines.

Material and methods: We examined the data of 552 patients diagnosed with acute heart failure syndrome, admitted for specialized treatment in the Cardiology Department of Internal Medicine Clinic of Târgu Mures, from January 2009 till January 2011. All statistical analyzes were performed using Graphpad InStat 3.06. We examined the demographic, clinical, biochemical, electrocardiographic and ecographic factors in order to identify those that predict the high risk of in-hospital mortality and to develop an algorithm that could be applied in the routine clinical practice.

In the purpose of monitoring the in-hospital prognostic we followed the mean hospitalization time and in-hospital mortality. In order to evaluate the chronic treatment of patients with heart failure (HF), we examined in parallel a multicenter group, of 61 patients, with previous hospitalizations for HF. The study of therapeutic trends and the accessibility to cardiac ultrasound at each center and for different specialist was realized using an evaluation sheet with simple questions, based on the European Guidelines.

Results:

The mean hospitalization time of the studied group was 9.37 days and in-hospital mortality was 8.15%.

Previous HF increase the time of hospitalization and the in-hospital mortality rates. (6.09 % vs. 9.8%, p=0.42).

The most frequent form of AHFS is the decompensated chronic HF and the worst prognosis has the cardiogenic shock. (RR 4.56, mortality 33.3%)

Pulmonary embolism, the worsening of valvular pathology and myocardial ischaemia, as triggers of cardiac decompensation considerably increase the risk of in-hospital mortality (RR 13.07, RR 2,99 and RR 1.86).

None of the demographic factors studied proved to be independent risk factor in acute heart failure (AHF) ($p>0.05$) but prior resuscitated cardiac arrest (RR 4.31), chronic renal failure (RR 2.56) and diabetes mellitus (RR 1.9) increase the in-hospital mortality risk.

Also, there is no statistically significant relation between the studied clinical factors and in-hospital mortality ($p>0.05$), but tachycardia (RR 3.72), prior hospitalizations for HF (RR 1.6), pulmonary stasis (RR 1.31) and low arterial blood pressure (RR 1.30) increase the risk of in-hospital mortality.

Some electrical anomalies of the heart in patients with AHF increase the risk of in-hospital mortality (RR>1), without having a clear predictive value, emphasizing the unforeseeable nature of this clinical syndrome. Among these electrical anomalies we mention: HR>90bpm (RR 3.72), SVT (RR 2.67), AV conductance disturbances (RR 2.42), PVBs with tendency to systematization (RR 2.20), malign ventricular arrhythmias during hospitalization – VT/VF (RR 3.38).

The cardiac ultrasound factors although there are numerous, useful and extremely relevant, isolated, do not have statistically significant influence on the immediate prognostic of the patients hospitalized for AHFS.

The biochemical profile was significantly modified in patients with AHF, but the only biochemical factor with statistically significant negative impact on the in-hospital clinical evolution was acute or chronic worsened renal failure.

Examining the therapeutical options we can state that the therapeutic portofolio of the pacient with AHFS is extremely limited and the diuretics are widely used, as main therapy in this syndrome.

The aspects that raise concern regarding the management of chronic HF might be the incoherency in the care of these patients: the lack of routine cardiac ultrasound evaluation; lack of wide usage of ACE inhibitors and beta-blockers; usage of too low doses of the correct drugs; the dependence of diuretics as lonely treatment in HF; low accessibility to device therapies.

Using the prior available data an in-hospital mortality risk evaluating algorithm was elaborated that easily translates demographic, clinical, biochemical, electrocardiographic and ultrasound factors available at admission, in a simple score system that reliably predicts the individual in-hospital mortality risk.

Conclusions:

Following an exhaustive examination of negative prognostic factors in AHF we can state that the main characteristic of the group of patients hospitalized with HF is heterogeneousness – the disparity of clinical forms, of comorbidities, triggers and prognostic disparity.

The lack of statistically significant influence of an isolated parameter confirms the multifactorial nature of this complex clinical syndrome.

The relative risk assigned to each factor proves the negative impact on the trajectory of the disease, but not in the 'isolated' form. Individually, none of these factors influence statistically significant the prognosis of these patients with AHF, but the constellation of these factors impose an unforeseeable trajectory of disease.

Applying these findings as a simple algorithm allows the identification of different risk groups, that helps in correct targeting of the therapeutical resources to underlying pathology and triggers.

In patients with AHF increased effort is needed in monitoring and ensuring the optimal treatment, especially in those with high risk.

Obviously, a quality and performance improvement of the medical care of patients with HF is imperative, using evidence based therapies and the guideline's recommendations.

The substantial risk of in-hospital mortality in patients with AHF is a definite proof of our disability in front of this complex clinical syndrome.

Key words: acute heart failure, predictive factor, in-hospital mortality, risk profile, algorithm, therapeutic adherence.