Abstract

Intensive therapy is a branch of medicine which deals with the treatment of patients with life-threatening conditions. Its beginnings go back to the 1950s and since that time there has been a continuous scientific and technical progress in critical patient care. One of the factors contributing to this advancement has been the development of renal replacement therapy. As this progress continues, attempts are made to identify the most effective extracorporeal blood purification method and the safest form of anticoagulation used during the procedure. A number of studies have been conducted to this aim, but they have not demonstrated the superiority of any of these methods. There was a rationale for a similar study, involving the analysis of data obtained from Polish ICU patients and, subsequently, their comparison with the results obtained in other countries.

The study aimed:

1. To assess the impact of particular renal replacement therapy techniques and anticoagulation types (intermittent hemodialysis, continuous renal replacement therapy with heparin anticoagulation, continuous renal replacement therapy with citrate anticoagulation) on patients' mortality in an intensive care unit, including in-hospital, 90-day and long-term, i.e. until 31st Dec. 2020, mortality.

2. To assess the impact of particular renal replacement therapy techniques and anticoagulation types (intermittent hemodialysis, continuous renal replacement therapy with heparin anticoagulation, continuous renal replacement therapy with citrate anticoagulation) on chronic kidney disease incidence and patients' dialysis dependence at hospital discharge.

3. To identify factors contributing to either increasing or decreasing mortality in patients with a particular renal replacement therapy technique and anticoagulation used.

A retrospective analysis of patients' medical histories was conducted, involving patients treated in the Department of Anaesthesiology and Intensive Therapy of the Regional Specialist Hospital in Olsztyn over the years 2003 – 2011. All the patients subject to any type of renal replacement therapy were identified, in the total number of 200. Following the inclusion and exclusion criteria, 128 patients were enrolled in the study, who were subsequently divided into three groups according to renal replacement therapy technique and anticoagulation used as presented below:

Group I: (IHD) – patients undergoing intermittent hemodialysis (41 individuals)

Group II: (HEP) – patients undergoing continuous renal replacement therapy with heparin anticoagulation (unfractionated and low-molecular-weight heparin) (40 individuals)

Group III (CYTR) – patients undergoing continuous renal replacement therapy with citrate anticoagulation (47 individuals)

The available data were subject to analysis regarding mortality, including long-term mortality, as well as dialysis dependence following hospital discharge, considering the division of patients into the three study groups.

Statistica 13 and MS Excel of Office 360 software were used for statistical analysis.

The conducted study leads to the following conclusions:

1. Comparing IHD to CRRT with heparin anticoagulation and CRRT with citrate anticoagulation respectively, the use of a particular renal replacement therapy technique or anticoagulation type was found to have no impact on the ICU patients' mortality, including in-hospital, 90-day or long-term mortality.

2. The patients who received IHD were more likely to be dialysis - dependent after hospital discharge than patients who received CRRT with heparin or citrate anticoagulation.

3. No contributory factors were conclusively identified which would affect prognosis in terms of mortality and dialysis dependence after hospital discharge depending on renal replacement therapy technique or the type of anticoagulation used.

4. Despite the differences in the severity of illness between the patients admitted to ICU of the Regional Specialist Hospital in Olsztyn and patients hospitalised in intensive therapy units in other countries, the results obtained in this study correspond, in the main points, with the results of the analyses conducted in the centres worldwide.