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The beneficial effect of specialized team on the operation of continuous renal replacement therapy

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Background: The requirement of continuous renal replacement therapy (CRRT) is increasing with the increasing incidence of acute kidney injury (AKI) in patients with multiple co-morbidities. The decision to start CRRT is not difficult if the adequate medical information is given. However, the operation of CRRT is a labor-intensive work that needs specialized skill. For these reasons, our center organized specialized CRRT team composed of physicians and nurses from March 2013. The aim of this study is to test the role of the specialized CRRT team for the operation of CRRT and for the patient survival.

Methods: This is the single center retrospective study that evaluated the AKI patients underwent CRRT in the intensive care unit (ICU) from March 2011 to February 2015 at Pusan National University Hospital. Patients were divided into two groups based on the application of specialized CRRT team. We collected the demographic features, the CRRT initiation time, actually delivered dose, CRRT down-time, number of filter used and in-hospital mortality. In-hospital morality was defined as the death during the hospital admission. Kaplan-Meier plots were used to compare the cumulative in-hospital mortality rate between two groups.

Results: A total of 1170 patients were enrolled in this study. The mean patient's ages were 60.09±14.41 years old, and the 62.9 patients were male. CRRT was initiated after the mean time of 2.73±3.77 days of the ICU admission, and maintained for average 5.12±5.67 days. After the application of specialized CRRT team, the CRRT initiation times (2.44±3.40 VS .24±4.31 days, p=0.005) and the CRRT down times were significantly reduced (8.57±13.67 VS 12.48±26.02, p=0.002). The actually delivered doses of CRRT and the numbers of filter used were similar between the two groups. The total in-hospital mortality rate was 54.5% and it was reduced after the application of specialized CRRT team (49.8 VS 59.3%, p=0.001). When the Kaplan-Meier survival plot was adjusted, the cumulative in-hospital mortality rate was significantly reduced after the application of specialized CRRT team (log rank=0.002).

Conclusion: In our center, the specialized CRRT team reduced in-hospital mortality rate in the AKI patients undergoing CRRT. This effect might be associated with the reduction of delay time from the CRRT decision to initiation and the reduction of CRRT down time.

Keywords: acute kidney injury, continuous renal replacement therapy, specialized team