Intensive Renal Support Doesn't Lower Mortality

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PHILADELPHIA — Intensive renal support in critically ill patients with acute kidney injury did not decrease mortality, accelerate recovery of renal function, or alter the rate of nonrenal organ failure in the randomized Veterans Affairs/National Institutes of Health Acute Renal Failure Trial Network study.

Results of previous smaller studies evaluating different strategies of renal support have been inconsistent, and while some studies favored more intensive, higher-dose approaches, such a strategy has not been adopted widely in the United States.

To address the uncertainty as to the optimal approach for acute kidney injury, a large trial was undertaken comparing conventional with intensive renal support. An integrative approach was used, in which hemodynamically stable patients were on standard intermittent therapy and hemodynamically unstable patients were on continuous therapy or sustained low-efficiency dialysis, according to the lead investigator, Dr. Paul M. Palevsky.

"Patients could move between modalities of therapy as their hemodynamic status changed, but they remained within a dosing schedule which was five to six times per week for a total effluent flow rate of 35 mL/kg per hour in the intensive group, and three times per week for a total effluent flow rate of 20 mL/kg per hour in the less-intensive group," said Dr. Palevsky of the renal section, VA Pittsburgh Healthcare System, and the department of medicine at the University of Pittsburgh.

To be eligible, patients had to be 18 years or older, critically ill, have acute kidney injury consistent with acute tubular necrosis, and have failure of one or more nonrenal organs, or sepsis.

A total of 563 patients were randomized to the intensive group; 561 were randomized to the conventional group.

The populations were well matched at baseline in terms of age, at a mean of 60 years, as well as in race, sex, and ethnicity and in baseline severity of illness and renal function, Dr. Palevsky said at the annual meeting of the American Society of Nephrology.

Mean serum creatinine was 1.1 mg/dL in both groups at baseline. A total of 88% of patients had an estimated glomerular filtration rate of at least 45 mL/min per 1.73 m^2, and none had a glomerular filtration rate below 30 mL/min per 1.73 m^2. The most common etiologies of kidney injury were ischemia, sepsis, and damage from nephrotoxins.

Therapy continued for 28 days or until the patient regained renal function, was withdrawn from life-sustaining care, was discharged from the acute care hospital, or died.

Patients in the intensive therapy group received an average of 5.4 sessions per week, with an interval between treatments of 1.1 days, while those in the less-intensive group averaged 3 sessions per week with an interval of 2 days between treatments.

Prescribed and delivered flow rates of venovenous hemodiafiltration were approximately 36 mL/kg per hour for the intensive group and just over 20 mL/kg per hour for the less-intensive group (N. Engl. J. Med. 2008;359:7-20).

"We observed no difference between the two groups on our primary outcome measure of 60-day all-cause mortality, with 53.6% in the intensive arm and 51.5% in the less-intensive arm," he said.

Complete recovery of kidney function by day 28 was seen in 15% of the intensive therapy group, and in 18% of those in the less-intensive group; there was no difference between the groups in number of days free of organ failure.

"We then looked at 1-year mortality and again there was no difference, with a total mortality of 34% in each group. Among patients who survived to day 60 there was an additional 20% mortality at 1 year," he said. Not only was mortality not decreased with the intensive therapy, but a greater percentage of patients undergoing intensive therapy experienced treatment-related hypotension and had more hypocalcemia and hypophosphatemia, he noted.

Dr. Palevsky disclosed no conflicts of interest. ■