

## **A SYSTEMATIC REVIEW AND META-ANALYSIS: THE USE OF PLASMA EXCHANGE FOR TREATMENT OF ACUTE RENAL FAILURE IN MULTIPLE MYELOMA**

Ashok Ammula<sup>1</sup>, Jonathan Sosnov<sup>2</sup>, Adam Segal<sup>1</sup>, Joline Chen<sup>1</sup>

1. Renal Section, Department of Medicine, Boston University, Boston, MA; 2. Division of Nephrology and Hypertension, Miller School of Medicine, University of Miami, Miami, FL

Acute renal failure due to light chain nephropathy causes significant morbidity and mortality in patients with multiple myeloma (MM). The use of plasma exchange to reduce light chain burden remains controversial. We performed a systematic review and meta-analysis of prior observational and experimental studies to evaluate the role of plasma exchange.

Using the keywords MM and plasma exchange, two reviewers searched the Medline and Cochrane databases from inception to November 2007 as well as annual nephrology meetings for all human studies in English-language. Studies with original research data on renal function change, dialysis rates, and short-term mortality were included. The exclusion criteria included studies with fewer than ten patients, duplicated research, or those studying other than acute renal failure. Only the randomized controlled trials were analyzed in the meta-analysis and pooled odds ratios using random effects models were calculated.

The initial search identified 217 human studies in English, of which 153 were designed to discuss the use of plasma exchange in myeloma. Only 45 non-review/editorial papers studied renal complications of myeloma. Among these studies, only five satisfied all inclusion and exclusion criteria. Only three of these studies were randomized control trials; the remainder were retrospective case-series. Most of the studies had poor methodologic quality and significant heterogeneity. While weaker evidences suggested potential renal and survival benefit of plasma exchange, the meta-analysis showed that plasma exchange did not improve renal survival (odds ratio 0.19; 95% CI: 0.02-1.55) or patient survival (odds ratio: 0.85, 95% CI: 0.17-4.30).

Most literature on plasma exchange in myelomatous renal failure were case reports and series with weaker methodological quality. While the benefit of plasma exchange in MM-associated acute renal failure remains questionable, the small number of studies, their significant heterogeneity, and the weaker quality were important limitations to draw robust conclusions.