

RESOLUTION OF CAST NEPHROPATHY FOLLOWING FREE LIGHT CHAIN REMOVAL BY HEMODIALYSIS IN A PATIENT WITH MULTIPLE MYELOMA.

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Background and Aims: Acute renal failure (ARF) in multiple myeloma (MM) is most commonly caused by cast nephropathy. The natural history of cast nephropathy after diagnosis and treatment is unknown.

We report the case of a 61 year old patient with dialysis-dependent ARF, MM and biopsy-proven cast nephropathy treated with chemotherapy and high cut-off hemodialysis. As the patient remained dialysis dependent after 6 weeks, a repeat renal biopsy was performed. This showed complete resolution of casts.

Methods: Identification of casts was performed on Hematoxylin and Eosin stained sections of kidney biopsy, while interstitial fibrosis scoring was performed on Elastic van Gieson stained sections. Chemotherapy protocol consisted of pulsed dexamethasone (40 mg once daily for 4 days per pulse) and thalidomide 100 mg once daily. Free light chain (FLC) concentrations were measured using the FREELITE™ assay. The patient received 8 dialysis sessions of 6-8 hours each for the first 14 days, followed by a thrice weekly 4-6 hour dialysis schedule. Two Gambro HCO1100™ high cut-off dialysers were used in series.

Results: On the initial renal biopsy, myelomatous casts were seen in approximately 30% of tubules, along with moderate interstitial fibrosis. On the follow-up biopsy, less than 5% of tubules contained casts, while interstitial fibrosis remained unchanged. Prior to treatment, serum kappa FLC concentration was 15,700 mg/L. Median reduction in FLC per dialysis session was 74%. After 16 dialysis sessions, 33 days after starting treatment, FLC concentration was reduced to less than 500 mg/L and were maintained below this level.

Conclusions: This report provides histological evidence that as serum FLC concentrations fall, casts can resolve within weeks. This observation provides an explanation for the successful reversal of ARF due to cast nephropathy in MM after rapid reduction of serum FLC by high cut-off hemodialysis.