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Diagnosis, Treatment, and Prevention of Hemodialysis Emergencies

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Abstract

Given the high comorbidity in patients on hemodialysis and the complexity of the dialysis treatment, it is remarkable how rarely a life-threatening complication occurs during dialysis. The low rate of dialysis emergencies can be attributed to numerous safety features in modern dialysis machines; meticulous treatment and testing of the dialysate solution to prevent exposure to trace elements, toxins, and pathogens; adherence to detailed treatment protocols; and extensive training of dialysis staff to handle medical emergencies. Most hemodialysis emergencies can be attributed to human error. A smaller number are due to rare idiosyncratic reactions. In this review, we highlight major emergencies that may occur during hemodialysis treatments, describe their pathogenesis, offer measures to minimize them, and provide specific interventions to prevent catastrophic consequences on the rare occasions when such emergencies arise. These emergencies include dialysis disequilibrium syndrome, venous air embolism, hemolysis, venous needle dislodgement, vascular access hemorrhage, major allergic reactions to the dialyzer or treatment medications, and disruption or contamination of the dialysis water system. Finally, we describe root cause analysis after a dialysis emergency has occurred to prevent a future recurrence.

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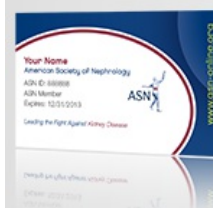
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