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Diagnosis and management of acute kidney injury in intensive care

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Acute kidney injury (AKI) is defined as rapid reduction in kidney functions resulting in failure to maintain fluid, electrolyte and acid-base homeostasis. AKI is reported to occur in 15-20% of all ICU patients and approximately 5% of them may require dialysis during ICU stay. Typically patients with AKI develop oliguria or anuria and may present signs and symptoms of fluid overload. Oliguria is defined as if urine output <1 ml/kg/hour in infants, and <0.5 ml/kg/hour in children and adults for consecutive 6 hours; while, anuria is defined as urine output <50 ml/24 hours in adult patients. Broadly speaking AKI is classified into pre-renal, renal and post-renal depending upon the initial insult leading to AKI. Among them pre-renal is the most common cause of AKI, approximately 55-90% in the ICU setting. Renal causes like acute vasculitis, interstitial nephritis, contrast nephropathy, severe rhabdomyolysis are also contributing to a small proportion of these patients. Post-renal causes accounts for less than 5% of all others. The main stay of management of AKI depends upon early recognition and early diagnosis of renal insults. To diagnose AKI, there is wide range of investigations, but recently some new biomarkers have been identified which help to identify early onset of AKI. Among these biomarkers, neutrophil gelatinase associated lipocalin (NGAL) has been identified in early diagnosis of AKI due to cardiopulmonary bypass, contrast induced nephropathy, AKI due to sepsis, early recognition of AKI after renal transplant. Some other biomarkers also have been identified for diagnosis of early AKI like, IL 18, KIM 1, Cystatin C and L-FABP. The initial management step of AKI is to treat the offending factors leading to renal impairment, e.g., treating dehydration and sepsis, stopping offending drugs like NSAIDs, aminoglycosides & ACE inhibitors, well rehydration before and after intravenous contrast agents to prevent contrast induced nephropathy. A quite fair number of patients end up requiring dialysis and continuous renal replacement therapy (CRRT) is the most effective method for dialysis in these patients. It may improve survival rate by 30%. There is large debate about early vs. late start of CRRT. But, all depends upon the clinical judgment and other associated parameters to make decision to start early CRRT in these patients. About 10% of all AKI patients may require chronic dialysis and further follow up. So, AKI is one of the serious problems in intensive care, its early recognition and management has a vital role in the management of critically ill patients.

Biography

Khalil Ahmad has completed his MBBS from Punjab Medical College Faisalabad, Pakistan in 1998. He then moved to FPGMI Shaikh Zayed Hospital Lahore, Pakistan for Residency Program in Internal Medicine. He has passed Fellowship Exam in Internal Medicine (FCPS) from College of Physicians & Surgeons in 2005 and moved to Dubai, UAE in 2006 and joined Rashid Hospital, Dubai Health Authority and also qualified Membership Exam from Royal Colleges of Physicians, UK (MRCP) in 2011. He has completed European Diploma in Intensive Care Medicine (EDIC) conducted by European Society of Intensive Care Medicine in 2013.

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