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Book Reviews

Acute kidney injury - From diagnosis to care, X. Ding, C. Ronco, editors (Karger, Basel, Switzerland) 2016. 148 pages. Price: US$ 209.00 / CHF 178.00 / EUR 166.00

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Incidence of acute kidney injury (AKI) is around 3-20 per cent in hospitalized patients and 30-60 per cent in those who are critically ill. Though great progress has been made in elucidating the mechanism and performing renal replacement therapy (RRT), mortality in AKI patients is still substantial. AKI is no longer considered as a completely reversible condition. AKI may lead to chronic kidney disease regardless of its cause. The right therapy also includes the right time frame, as delayed treatment may not offer any benefit. Hence early recognition of AKI is extremely important. Considering these points "International Society of Nephrology" has launched 0/25 initiative to eliminate preventable deaths from AKI worldwide by 2025.

This book is aptly timed and will be of immense use to clinicians. It provides a comprehensive review of most aspects of AKI by authors who are pioneers in this field. The book educates treating physicians or surgeons and also makes them aware about importance of AKI and its catastrophic effects. The book is divided into three sections, (*i*) 'AKI Characteristics and Epidemiology', (*ii*) 'AKI Pathophysiology and Diagnosis' and, (*iii*) 'AKI Management'. Different consensus definitions of AKI over a decade and half have been tabulated in the chapter of epidemiology of AKI. For a physician a mere recent rise of serum creatinine $\geq$ 0.3 mg/dl in a patient should ring the alarm bells. This is important for a country like ours where small changes are attributed to laboratory variations or errors.

The need to put in place, an AKI alert system has been aptly described in a chapter electronic data systems and AKI. The spectrum of electronic warning system benefits could range from the early and precise detection of AKI to the accurate prediction of this syndrome, supplemented with clinical decision support systems for higher-risk-patients. Prevention of AKI needs risk evaluation of patients which has been summarized in a separate chapter. To stimulate the minds of clinicians and researchers, a whole list of novel targets and drugs *viz*. mitochondria-targeted antioxidant (mitoquinone mesylate), bone morphogenic protein 7, PPAR (peroxisome proliferator-activated receptor) antagonists, *etc*. (though none has been approved by FDA) has been provided in a concise manner.

The chapter "Pathophysiology of Septic Acute Kidney Injury" describes how the initial protective mechanism when prolonged amplifies systemic inflammatory response leading to tubular damage. This results in decrease in glomerular filtration rate (GFR) which adds on to independent glomerular effects of sepsis. A number of possible cellular mechanism causing AKI like apoptosis, ferroptosis, necroptosis, glycocalyx breakdown mitochondrial permeability transition and novel therapies modulating these pathways like caspase inhibitors, ferrostatin, necrostatin-1, corticosteroids, cyclosporine A, *etc* have been tabulated, which is easy to comprehend.

Since decades we have been relying on serum creatinine as a marker of kidney injury, knowing very well that it is a late marker of kidney injury. Search for a biomarker which would not only diagnose AKI at an early stage but also to test future therapies is still elusive. Search for the "troponin" of kidney injury is on and has been discussed in an independent chapter.

This book not only discusses early identification and preventive strategies, but also details the lesser

discussed aspects such as how to assess renal recovery after AKI, and why it progresses to chronic kidney disease (CKD). The notion that ischemic, toxic or septic insults to the kidney will for the most part resolve without permanent damage is obsolete. AKI and CKD are linked in a bidirectional pathogenetic association, this is an important concept which has to be understood by those who are involved in patient care.

Management issues in day-to-day practice have also been dealt with. In critically ill patients fluid administration is a big challenge. Measurement of fluid responsiveness is difficult as less fluid may result in decreased cardiac output and more fluid may lead to sequestration in extravascular space. Timing of fluid administration and type of fluid to be given is well discussed in the chapter on fluid management in AKI. This will be of great use not only to doctors but also nursing staff who are an integral part of the team.

In the absence of any effective therapies to restore kidney function, AKI is usually managed by acute renal replacement therapy (ARRT), optimization of which may reduce the mortality. ARRT needs multidimensional approach depending on the patient condition. Which form of RRT, its dosage and more importantly the right timing for its initiation (proactive or rescue therapy). All these issues have been dealt with in a simple manner to drive home the message that therapy has to be individualized.

There is a chapter devoted to continuous renal replacement therapy (CRRT) in paediatric population, which deals with both the clinical and specific technical aspects of this age group. Another chapter addresses the issue of cardiac surgery associated AKI.

This book is of use to nephrologists, intensivists (paediatricians included) as well as internists. Cardiologists and cardiovascular surgeons also have to face the problem of AKI, hence it is a good accompaniment for them. Additionally nursing staff in dialysis and intensive care units will find it useful in understanding the overall concept of AKI from diagnosis to management.

Habir Singh Kohli
Department of Nephrology
Postgraduate Institute of Medical
Education and Research
Chandigarh 160 012, India
kohlihs2009@gmail.com