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RESEARCH HIGHLIGHT

Acute kidney injury in China: A neglected truth and perspective



Acute kidney injury (AKI) affects approximately 13.3 million individuals and contributes to about 1.7 million deaths globally per year. As estimated 85% of those affected live in the developing world [1]. Although there are various measures to prevent or treat AKI, including renal protective drugs and continuous renal replacement therapy, most of them have limited success or are still in their infancy [2,3]. An additional study, newly published in the *Lancet*, indicated that the number of people needing renal replacement therapy is expected to be doubled, from 2.62 million in 2010 to 5.44 million in 2030, with spikes projected in Asia and Africa [4]. Therefore, AKI remains a serious burden for the medical system, especially in developing countries. In 2013, the International Society of Nephrology (ISN) launched a global target of “0by25”, no patient deaths due to untreated acute kidney failure by 2025, in order to improve the diagnosis and treatment of AKI worldwide.

To reach this great aim, comprehensive information of AKI in China is indispensable. China is the largest developing country in the world, and has not only vast territory, but also different geological regions, coast and inland, and 56 races. In addition, huge differences existing in economic status and health care investment among these regions affect the outcome of AKI. However, there is still lack of a system database of AKI as the same in other developing countries. Fortunately, Dr. Yang and colleagues [5] launched a nationwide, cross-sectional survey of adult hospitalized patients during January–July 2013 in mainland China, evaluated the burden of AKI and assessed the availability of diagnosis and treatment. This valuable study timely published in *Lancet*, 2015 Oct 10.

The highlight of this study was including 22 out of 31 provinces, municipalities, and autonomous regions in China, covering 82% population in the country, and four geographical regions. The detection rate of AKI in over 200 million Chinese adults from 44 hospitals was near 1% according to KDIGO criteria (the 2012 Kidney Disease: Improving Global Outcomes) and 2% by the expanded criteria (an increase or decrease in serum creatinine by 50%

in hospital stay). The mortality of AKI in hospitalized patients was 12.4%, whereas 65% death rate was noticed in the patients discharged with severe AKI without further treatment. The total deaths were about 0.7 million, so the corrected mortality of recognized AKI should be just over 30% in this Chinese survey during 2013. The renal referral was 21.4%, which was revealed as an independent protective factor for AKI mortality. Although the authors factually discussed the limitations of this survey, it undoubtedly provided a unique set of data for investigating the characteristics of AKI, which also provided valuable guides for formulating respective strategies in near future.

One of the shocking results from this study is the very high non-recognition rate of AKI by the physicians in charge, which is as high as 74.2% during hospital stay. Furthermore, the rate of timely diagnosis of AKI is only 21.2%, while 4.6% of AKI patients were diagnosed with delay, with no significant difference between academic and local hospitals. The data demonstrated that the medical doctors in China are still lack of awareness of AKI in general. The slight increase of serum creatinine is often ignored by doctors, which leads to timely reexaminations also neglected. Physicians, especially renal specialists and intensive care unit specialists, might pay more attention to renal function during hospital stay, but surgeons might not evaluate renal function properly before surgery and follow-up in time after surgery. However, there is lacking of data regarding the difference of AKI recognition rate among different departments of the hospitals in this study.

Another problem revealed was that only 16.7% of AKI patients were reported to the health-care system (by ICD-10 codes). This will result in remarkable underestimation of the clinical and financial significance of AKI by the government/the medical authority, which could subsequently influence the policy making, of course, the outcome of AKI in 2025 as well. The significant regional difference of AKI detection rate was also demonstrated by the authors. The patients were more likely under-recognition of AKI in less developed regions such as the southwest and the northwest regions compared with more developed north China. The

<http://dx.doi.org/10.1016/j.ajur.2015.11.001>

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divergent profile might be associated with environmental, traditional and socioeconomic factors.

The additional alarming feature from this Chinese AKI survey was the 71.6% high proportion of nephrotoxic drug exposure before or at the time AKI developed, compared with the 20%–50% reported in developed countries. The authors discussed potential explanations, for instance, that people can easily access a wide range of non-prescription drugs including Western medicine and traditional Chinese medicine. In China, many people like to take traditional Chinese medicine in order to improve immune function even without any disease, or help physical recovery post operation. Some of them take daily traditional Chinese medications as a routine for months without the instruction from physicians, and subsequently suffered from renal dysfunction. Apart from non-prescription medicines, people could still access prescribed medicines, although the prescription has been restricted. Inappropriately using certain prescribed medicines will also cause AKI. The data from this study should attract attention from the policy makers in the government and the medical authority alike.

It is imperative to facilitate comprehensive education and training programmes in China, to raise the awareness of Chinese health-care authorities and professionals in severe defects of AKI, to develop advanced methods for early detection and treatment, to set up efficient and user-friendly systems to identify and monitor AKI, including risk assessment, response, renal support and rehabilitation, in the hospitals over next 10 years, and to ultimately fulfil the ISN initiative of Oby25 in China.

Conflicts of interest

The authors declare no conflict of interest.

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6 November 2015

Available online 17 November 2015