Ethnicity and acute kidney injury: the correct definition of acute kidney injury?

Editor—We read with great interest the article by Chew and colleagues1 on the association of ethnicity and acute kidney injury (AKI) after cardiac surgery in a South East Asian population. The role of genetics in health and pathology is a fascinating area of study which requires much more exploration. There are, however, some questions we would like to pose.

The study’s main outcome was postoperative AKI defined as ‘a 25% or greater increase in preoperative to a maximum postoperative serum creatinine level within three days after surgery’. We feel that the relatively low fractional change in serum creatinine used by the authors to define AKI has led to a larger number of patients being categorized as having AKI. We would be interested to know if these differences in rates of AKI between the ethnic groups persist when the evidence-based international consensus definitions of AKI such as the RIFLE criteria2 and Acute Kidney Injury Network (AKIN)3 staging system are used.

The RIFLE criteria for acute renal dysfunction were developed by the consensus conference of the Acute Dialysis Quality Initiative in 2003. This system uses GFR criteria or urine output criteria to classify patients into three severity categories—risk, injury, and failure—and two outcome categories—loss and end-stage renal failure. The RIFLE criteria define ‘Risk’ as an increase in serum creatinine of 1.5 times the baseline and ‘Injury’ as an increase in serum creatinine two times the baseline. Both the ‘risk’ and ‘injury’ classifications are highly sensitive in determining potential AKI. AKIN, an international group of nephrologists and critical care experts, agreed by consensus a staging system for the spectrum of AKI, where mild AKI is defined as a percentage increase in serum creatinine of more than or equal to 50% (1.5-fold) from baseline. If the authors had used these widely accepted classification systems, we suspect that the statistics would be quite different.

On a final point of interest, we would be fascinated to know if there was any difference in the distribution of the ethnic groups between the two hospitals or between individual surgeons? Could patients’ self-selection in terms of presentation to a particular hospital or to a particular surgeon be having an impact on their outcome?

Organ failure related to ethnicity

Editor—We read with great interest the article by Chew and colleagues1 dealing with acute kidney failure (AKI) after cardiac surgery comparing three groups of people: Indians, Malays, and Chinese, all from South Asia. This prospective study determined that the ethnic populations of India and the Malays were at a higher risk for developing renal failure than Chinese. It is not surprising that this may occur since the life styles of these people are so different from Chinese. The genetics are different and also food intake, cultural background, and environment. All must be taken into consideration to determine health status which in many South Asian countries is below standard. The people of these populations are known not to live long lives because of various illnesses and conditions. By and large, Chinese people are healthier than other South Asian countries.

The authors of the article1 point out themselves that genetics plays a major role in developing renal failure post-cardiac surgery and their results show the gene–environment interaction.

We would like to suggest a different retrospective or prospective scientific investigation concerning this problem of
AKI. Instead of incorporating other South Asian populations, just investigate the Chinese populations of Northern China vs Central vs Southern China and compare the results with Chinese people living in Taiwan or other countries.

All these people are relatively homogenous and their socioeconomic factors may be very similar or different. This study would tell us how this single ethnic population reacts to cardiac surgery and postoperative organ dysfunction. The Chinese life style is known to be much higher and better than other South Asian countries. Patient care would be improved substantially.

A similar investigation occurred years ago, around 1966–7 which dealt with two ethnic Caucasian populations in two different countries investigating a neuromuscular blocking agent to see the difference in response. This study pointed out that even in similar ethnic groups, there are different reactions. Comparing Chinese groups for AKI would be very interesting and noteworthy to all physicians, anaesthesiologists, and surgeons alike.

**Declaration of interest**

None declared.

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Reply from the authors

Editor—We are grateful for this opportunity to reply to Dr Atwal and his colleagues’ comments on our article.

We used the relatively low fractional change in serum creatinine as it has been previously described in one of our papers. Loef and colleagues in using the same criteria have shown that the immediate and small decline in renal function is associated not only with early mortality but also mortality in the longer term. A fractional change in serum creatinine of at least 25% represents a decrease in GFR of at least 20% which may be significant in the long term. This will identify patients who require specific preventive measures during the follow-up period. We have also analysed the data based on the AKIN criteria and there is a racial difference in that the Malays have a higher risk compared with the Chinese [odds ratio (OR) 1.457, confidence interval (CI) 1.04–2.0, \(P=0.02\)], but the Indians did not reach statistical significance (OR 1.399, CI 0.95–2.0, \(P=0.08\)). We shall be repeating the analyses with a bigger sample of patients.

Our study population is unique as the city state is relatively homogenous with a high standard of healthcare and access to healthcare from patients is unimpeded. The two heart centres are public institutions doing more than 80% of all heart surgeries in the country and the distribution of patients between the centres is fairly even, often with porosity between the two. The referral base to these hospitals comes from the various public primary care clinics with little surgeon bias.

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Pharmacological perioperative brain neuroprotection: nimodipine?

Editor—I read with great interest the article ‘Pharmacological perioperative brain neuroprotection: nimodipine?’ by Bilotta and colleagues. The authors reviewed 25 randomized clinical trials addressing perioperative pharmacological neuroprotection. They concluded that only atorvastatin and magnesium sulphate were associated with a lower incidence of new postoperative neurologic deficits. I would like to draw your attention to a missing prospectively performed, randomized clinical trial with 30 patients published in Neurosurgery revealing the neuroprotective efficacy of perioperative nimodipine medication for the preservation of facial and cochlear nerve functions in vestibular schwannoma surgery. The results were significant for a better outcome for both hearing (\(P=0.041\)) and facial nerve (\(P=0.045\)) preservation in the group of patients who received a