

GUEST EDITORIAL

ALLERGY AND IMMUNOLOGY IN THE CRITICAL CARE ENVIRONMENT



This edition of the journal has focused on some aspects of allergy and immunology in the context of critical care. Critical care is unusual as a subspecialty in the wide range of conditions that are managed by health care workers in the discipline. Yet disturbances of the immune system are a common feature in the majority of

patients within the intensive care unit (ICU) and many routine therapies have profound effects on the immune system.

Major surgery,¹ trauma and critical illness² may all have profound effects on the immune system. As one example, patients admitted to intensive care following elective cardiac surgery have alterations in immune function which may affect the rate of postoperative complications and these alterations may depend on the immunological genotype of the patient.³

Asthma is one condition with an allergic component that has received much attention in the critical care environment. The article by Kissoon provides an overview of recent insights into the epidemiology of life-threatening paediatric asthma, as well as a review of recent therapeutic advances in its management.

Toxic epidermal necrolysis or Stevens-Johnson syndrome is fortunately an uncommon condition, but it is being seen more frequently in association with HIV infections, and the article by Lehloeny provides a comprehensive overview of the condition. The article highlights the multidisciplinary teamwork that is required for successful management of this complex condition.

As a result of aggressive chemotherapy for oncological problems, a proliferation of patients with acquired immune deficiencies and also increasing recognition of congenital immune deficits, the number of immunosuppressed patients in the ICU environment across the world is increasing.

Once in the intensive care environment, patients are exposed to a wide range of medications and therapies. Allergic drug reactions are fortunately relatively rare, but in the context of critical illness, they may be extremely difficult to recognise and treat. The articles by Green and Potter, and Fischer highlight many of the issues related to allergic reactions to antibiotics and anaesthetic agents.

A wide range of therapies employed within the critical care environment affect the immune system. This includes known immunomodulatory agents such as corticosteroids, but therapies as diverse as hypertonic saline,⁴ hypothermia⁵ and opiate administration⁶ have

all been documented as altering immune function. Nutritional intake in the ICU may have significant impact on immune responses, but there is however ongoing controversy about how 'immunomodulatory diets' should be utilised.⁷

Steroids are used in a wide variety of situations within the environment with varying levels of evidence. Within the context of severe sepsis there has been a movement: from the use of 'shock' doses of steroids for septic shock; to the recognition of increased mortality and cessation of steroid use; to the recognition of steroid 'deficiency' (which is very difficult to define); to the use of 'replacement' doses of corticosteroids; and again to ongoing research and reviews of the subject. The topic remains controversial and further research is needed.⁸

Finally, personnel in the critical care environment are exposed to many agents including latex which may have profound effects on their wellbeing. Close attention to allergic symptoms may be an important facet of occupational safety for critical care workers.

Immune and allergic responses are therefore important issues in the critical care environment, and the critical care community can only benefit from increasing involvement of specialists in allergy and immunology.

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Guest Editor

1. Ni Choileain N, Redmond HP. Cell response to surgery. *Arch Surg* 2006; **141**: 1132-1140.
2. Smith JW, Gamelli RL, Jones SB, Shankar R. Immunologic responses to critical injury and sepsis. *J Intensive Care Med* 2006; **21**: 160-172.
3. Allen ML, Hoschitzky JA, Peters MJ, et al. Interleukin-10 and its role in clinical immunoparalysis following pediatric cardiac surgery. *Crit Care Med* 2006; **34**: 2658-2665.
4. Poli-de-Figueiredo LF, Cruz RJ, Sannomiya P, Rocha-E-Silva M. Mechanisms of action of hypertonic saline resuscitation in severe sepsis and septic shock. *Endocr Metab Immune Disord Drug Targets* 2006; **6(2)**: 201-206.
5. Hildebrand F, van Griensven M, Giannoudis P, et al. Impact of hypothermia on the immunologic response after trauma and elective surgery. *Surg Technol Int* 2005; **14**: 41-50.
6. Molina PE. Opioids and opiates: analgesia with cardiovascular, haemodynamic and immune implications in critical illness. *J Intern Med* 2006; **259**: 138-154.
7. Sacks GS, Genton L, Kudsk KA. Controversy of immunonutrition for surgical critical-illness patients. *Curr Opin Crit Care* 2003; **9**: 300-305.
8. Aneja R, Carcillo JA. What is the rationale for hydrocortisone treatment in children with infection-related adrenal insufficiency and septic shock? *Arch Dis Child* 2007; **92**:165-169. Epub 2006 Sep 26.