DS Nelson Trainee Prize Presentation

ENHANCING PATHOLOGY LEARNING EXPERIENCE OF MEDICAL STUDENTS USING MULTIPLE ADVANCED LEARNING AND TEACHING STRATEGIES

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Aim: Currently most medical schools use an integrated multi-disciplinary approach in their curricula; therefore creating a huge challenge to engage medical students by delivering traditional pathology modules. In this study, we aimed to implement multiple advanced strategies to improve medical students' pathology learning experience at Griffith University.

Methods: Students enrolled in the second year of Griffith medical programme between 2011 and 2012 were invited to complete questionnaires rating the value and impact of resources delivered on their learning experience. In total, 272/290 students responded. The strategies adopted include virtual microscopy, web-based digitalised interactive modules, clinical scenario-integrated lectures, practical histology sessions and gross specimen demonstration. Quality and usefulness of the delivery of these modules were assessed using a 5 scale questionnaire.

Results: In both years, overall score was high (mean score >4.5/5) for the histology lectures, clinical integrations and virtual microscopy sessions. The traditional delivery of practical and lecture sessions received lower scores. Qualitative comments suggested that the advanced methods were extremely useful for students' learning experience of pathology.

Discussion: A multidisciplinary approach by clinico-pathological integration and the use of virtual microscopy has the potential to better engage students to pathology learning in the modern medical curriculum.

SERUM FROM A SUBSET OF PATIENTS WITH CHRONIC LYMPHOCYTIC LEUKAEMIA AND LARGE LOCAL REACTIONS TO MOSQUITO BITES SIGNIFICANTLY INDUCES UPREGULATION OF CD63 SURFACE EXPRESSION IN ATOPIC BASOPHILS

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Aims: There is an increased prevalence of large local reactions to mosquito bites in patients with chronic lymphocytic leukaemia (CLL). We hypothesise that these patients may have circulating autoantibodies that bind to the FCεRI receptor of mast cells and basophils, which trigger the IgE-mediated development of large local reactions.

Methods: We devised a novel method to detect the presence of these autoantibodies. Six patients with CLL and large local reactions to mosquito bites were included in the study. Donor basophils were incubated with serum from each patient. Upregulation of basophil CD63 surface expression was measured.

Results: In atopic donor basophils, significant CD63 upregulation was induced by the serum of 3 of 6 patients (50%).

Discussion: Our study demonstrates that a subset of CLL patients have circulating autoantibodies that bind to the FCεRI receptor of mast cells and basophils, which then mediate large local reactions to mosquito bites. This novel finding may represent a new mechanism of autoimmunity in CLL, a heterogeneous disorder that is associated with autoantibody formation and multiple autoimmune diseases.¹

Reference

1. Hodgson K, Ferrer G, Montserrat E, Moreno C. Chronic lymphocytic leukemia and autoimmunity: A systematic review. *Haematologica* 2011; 96: 752–61.

APPLICATION OF REAL-TIME PCR FOR THE DIAGNOSIS OF STRONGYLOIDIASIS IN NORTH QUEENSLAND

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Aims: Diagnosis of infection with *Strongyloides stercoralis* is difficult through traditional coprological methods. Molecular methods may represent an improved methodology for the diagnosis of strongyloidiasis due to increased sensitivity and non-reliance on the presence of viable larvae.

Methods: Between January and December 2014, randomly selected stool samples undergoing routine analysis for parasites at The Townsville Hospital were subjected to real-time PCR for *S. stercoralis*, as previously described.¹ PCR positives were further analysed by conventional, nested polymerase chain reaction (PCR) targeting a region of the 18S gene using novel primers, and isolated amplicons were sequenced.

Results: A total of 696 specimens were analysed by traditional methods and real-time PCR. Fifty-nine specimens were positive by real-time PCR, as compared to three by routine methods. Twenty of these were further characterised by conventional PCR as *S. stercoralis*.

Discussion: Real-time PCR for *S. stercoralis* is a promising method for diagnosis of an important parasitic infection

endemic to northern Australia. Problems with specificity may be improved with modification of extraction methods and primer sequences.

Reference

1. Verweij JJ, Canales M, Polman K, *et al.* Molecular diagnosis of *Strongyloides stercoralis* in faecal samples using real-time PCR. *Trans R Soc Trop Med Hyg* 2009; 103: 342–6.