Changes to pertussis testing

Following an extensive analysis of pertussis testing, Sullivan Nicolaides Pathology will no longer be performing PT IgA for diagnosis but, will rely solely on the more reliable and accurate nasopharyngeal PCR and serum PT IgG.

Dr Meryta May, Sullivan Nicolaides Pathology Microbiology Department

In 2013, SNP began to report pertussis serology in international units following a prospective clinical assessment of how the testing correlated with acute pertussis diagnosis in the community.

Since that time we have continued to review the performance of the tests. One of the major findings of the prospective assessment was the importance of Pertussis Toxin IgG (PT IgG) as an accurate serological marker of acute pertussis infection. Pertussis Toxin IgA (PT IgA) results were found to add little to the acute diagnosis of pertussis, as few people develop a PT IgA without an accompanying PT IgG. Infants also rarely develop a PT IgA response.

Subsequently, a large retrospective analysis of data was undertaken in 2015 of all pertussis serology and PCR tests performed between January 2013 and December 2015 – a total of 114,432 samples.

The major findings of this analysis are now available:

1. Isolated positive PT IgA results are present in only 3–3.7% of all pertussis serology tests performed, including PCR-confirmed cases. This confirms that few people develop a PT IgA without an accompanying PT IgG. (Fig 1)

2. 184 paired sera with no PCR or negative PCR results and a negative PT IgG but positive PT IgA were reviewed. Only 15 (8%) were judged to be consistent with acute infection. The remaining 169 were either transient or persistent false positive PT IgA results. (Fig 2)

3. If there is no accompanying positive PT IgG result, the likelihood of a positive PT IgA being a true positive result is approximately 1 in 17.

This means that most isolated positive PT IgA results are likely to be false positives or represent residual antibodies from past infection. This leads to over-reporting of acute pertussis cases, and unnecessary follow-up testing of low positive or equivocal results.

As a consequence of this analysis, in the near future, SNP will discontinue performing PT IgA for diagnosis of pertussis, but will rely solely on the more reliable and accurate nasopharyngeal PCR and serum PT IgG for diagnosis.

PCR TESTING THE METHOD OF CHOICE FOR DIAGNOSIS

PCR testing is the method of choice for diagnosis, especially within the first three to four weeks of symptoms. After this time, the sensitivity of PCR is reduced and false negative results are more common. Serology is often positive by the time patients seek medical attention, so it is suggested both tests could be requested if symptoms have been present >10–14 days. If symptoms have been present >4 weeks, serology alone can be requested. Tests for other infectious causes for a pertussis-like syndrome can also be requested on these samples if needed, or added if a negative result for pertussis is received.

STILL NO RELIABLE TESTS FOR DETERMINING IMMUNE STATUS

As has previously been the case, there are still no reliable tests for determining immune status for pertussis. Testing for immune status is not recommended as there is no well-defined correlation between PT IgG levels and protection from clinical infections. If educational institutions request proof of immunity to pertussis, the patient’s immunisation records should be provided. A booster dose of dTpa can be given if the previous dTpa was more than five years prior.

References


Information about our Warfarin Care program over Easter

To ensure the safe and complete enrolment of patients into our Warfarin Care program, enrolments will be closed between the following dates:

Community patients: closing 5 pm Thursday 10 March and re-opening 9 am Tuesday 29 March 2016.

Hospital patients: closing 5 pm Monday 14 March and re-opening 9 am Tuesday 29 March 2016.

Collection centres
Please visit our website www.snp.com.au for information regarding collection centre closures.

Can faecal calprotectin replace colonoscopy for post-surgical followup of patients with Crohn’s disease?

Dr Daman Langguth, Head of Sullivan Nicolaides Pathology Immunology Department

The recent Autoimmunity Blog, hosted by ORGENTEC Diagnostika GmbH, has drawn attention to two large studies that investigate the performance of faecal calprotectin tests in the postoperative monitoring of Crohn’s disease. The studies (in Australia and France) are among the first to investigate the potential of surrogate biomarkers in large cohorts of patients with Crohn’s disease.

Blog author, Friederike Hammar, suggests they show that, while faecal calprotectin will not completely replace the need for colonoscopy, it can be useful in identifying those patients who are most likely to relapse. She says: “The non-invasive calprotectin test may thus contribute to cost reduction and motivate patients to have their disease state controlled more regularly”.

In one study, Australian scientists analysed data from 135 patients at hospitals in Australia and New Zealand. They found that levels of faecal calprotectin greater than 100 µg/g indicated endoscopic recurrence with 89% sensitivity, 58% specificity, and a negative predictive value of 91%. These results indicate that colonoscopy could have been avoided in 47% of the patients. Six months after surgery, levels of faecal calprotectin below 51 µg/g predicted maintenance of endoscopic remission.

The French study, which compared faecal calprotectin and serum CRP, showed similar results. Blood tests for CRP, measurement of faecal calprotectin and endoscopic investigations were performed between 3 and 18 months after surgery. The overall accuracy was better for faecal calprotectin (77%) than for CRP (53%). The combination of faecal calprotectin and serum CRP determination did not perform better than faecal calprotectin alone.


Can faecal calprotectin replace colonoscopy for post-surgical followup of patients with Crohn’s disease?

Spleen Australia Registry – increased risk of severe bacterial sepsis in those without a functioning spleen

People without a spleen, or who have one that does not function, are at lifelong increased risk of a severe bacterial infection. The most common infections are pneumococcus, meningococcus and Haemophilus influenzae type B. Blood films can show characteristic changes suggestive of this condition. (Fig1)

Pneumococcal, meningococcal, Hib and influenza vaccination are particularly recommended for all persons with asplenia, whether functional or anatomical. Other vaccinations should be kept up to date.

Fig 1 Hyposplenic/asplenic blood film with characteristic Howell Jolly Bodies

The availability of new vaccines and changing schedules can be confusing. The Spleen Australia Registry is a clinical service and registry for people with a non-functioning spleen that is supported by the Victorian, Tasmanian and Queensland governments. The Registry provides information and advice on optimal timing of vaccine administration, informs people of the role of antibiotics, and provides education on how to stay healthy.

Registered patients receive:
• medical information on managing asplenia or hyposplenism
• a credit-card-sized ‘spleen alert card’ to be carried at all times in case of emergencies, as well as other educational material
• an annual newsletter providing reminders for flu vaccinations and booster vaccinations
• access to phone support for questions, via 1800 SPELEN (1800 776 336) and information on where in Queensland they can access medical advice for overseas travel.

Patients needing help who live outside the state can call Spleen Australia on (03) 9076 3828.

For further information please contact:
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