Atoms

Howard Bauchner, *Editor-in-Chief*

Serious bacterial infection in young infants

In 1975 Teele, Pelton and colleagues reported the results of cultures of blood of 600 consecutive febrile children.[1] Their findings – about 10% of infants who had temperatures above 38°C and white counts above 15,000 had bacteraemia, most commonly with *Haemophilus influenzae* type B or *Streptococcus pneumoniae*. This landmark study launched a 35-year odyssey that continues to this day – how to identify young infants with serious bacterial infection (SBI). The major changes over the past 15 years have been the dramatic reduction in the incidence of bacterial meningitis and bacteraemia, following the introduction of the *H influenzae* type B and pneumococcal conjugate vaccines, and the aggressive search for urinary tract infections (UTIs). Interestingly, given numerous recent reports about UTIs, identifying infants with UTIs may not be as important as once thought. In this issue, Olaciregui *et al* from Spain, report on the diagnostic utility of procalcitonin (PCT) and C reactive protein (CRP). They found that both PCT and CRP are superior to leucocyte count in predicting which febrile infants have SBI and PCT is superior to CRP in infants with more serious SBI (sepsis, bacteraemia, bacterial meningitis). Unfortunately, like virtually all diagnostic tests, the precision of these tests is not perfect – both false positives and negatives occur. I do not believe that we will ever find a diagnostic test(s), which identifies all infants with SBI. The question for clinicians and parents is unchanged – how much uncertainty are they willing to tolerate. Does every febrile infant less than one month (or three months) of age require a lumbar puncture and urine culture? Or can we use PCT, CRP and white blood cell counts to guide whether we need to perform additional diagnostic tests. ***See page 501***

The advent of personalised health

Personalised health – the use of individual biomarkers, most often a person's specific genetic profile – to improve information about prognosis and guide therapy, is becoming increasingly common. Initially most of these articles appeared in the major generalist journals, such as *New England Journal of Medicine* or *JAMA*, but as technology has improved, particularly the ability to analyse single nucleotide pairs quickly, articles reporting the association between specific genes and various diseases now appear in almost every journal. Smoot *et al* from Boston, report that children with hereditary haemorrhagic telangiectasia and the ALK1 mutation may be at increased risk for pulmonary hypertension. As someone who graduated from medical school more than 25 years ago, I am unfamiliar with much of language of contemporary genetics. In a wonderful series in *JAMA*, as part of the well-known readers guide to the literature, John Attia and colleagues use a specific case to help us understand the reliability and validity of these types of reports.[2-4] ***See page 506***

Autism and primary gastrointestinal pathology

The 1998 Wakefield paper in the *Lancet* ignited a worldwide concern that there was a link between MMR vaccine and autism. Despite no credible evidence that such an association exists, many groups remain concerned that immunisations are somehow fuelling the increasing prevalence of autism. The UK is just now recovering from the impact of the *Lancet* paper on MMR immunization rates. Unfortunately, it appears that many of the concerns raised by parents in the UK have crossed the pond and are affecting immunisation rates (and schedule) in the US.[5] Drs Sandhu, Steer, Golding and Emond, from the University of Bristol report that during the first 42 months of life, children with autistic spectrum disorder have a similar stool pattern to other children. Although there was a slight increase in stool frequency between 30 and 42 months of age they conclude: "There were no symptoms to support the hypothesis that ASD children had enterocolitis." ***See page 497***

This month in *F&N*

- Deshpande and colleagues from Shrewsbury investigated 137 of 33067 infants born with a single umbilical artery. Their findings – postnatal ultrasound is not routinely warranted.
- There is a biomarker study examining the relationship between periventricular leucomalacia (PVL) and mental retardation from Austria. Specific IL-6 genotypes appear to modify the severity of neurocognitive impairment following PVL.
- The effect of prophylactic oral nystatin for premature infants remains hotly debated. In a report from Liverpool, the use of nystatin was associated with a significant reduction in the incidence of invasive fungaemia. Although the number of infants studied was large (1459), the study design – pre/post – always raises concerns that other changes may have led to the reduction in disease.
- Discharge from hospital and breastfeeding are two important goals for premature infants. In a preliminary report from the Netherlands, early discharge with tube feeding at home was associated with a longer duration of breast feeding. As is often the case in studies such as this one, the type and intensity of home support is critical.

References

1. **Teele DW,** Pelton SI, Grant MJ, *et al*. Bacteremia in febrile children under 2 years of age: results of cultures of blood of 600 consecutive febrile children seen in a "walk-in" clinic. *J Pediatr* 1975 Aug;**87**:227–230.
2. **Attia J,** Ioannidis JP, Thakkinstian A, *et al*. How to use an article about genetic association – background concepts. *JAMA* 2009;**301**:74–81.
3. **Attia J,** Ioannidis JP, Thakkinstian A, *et al*. How to use an article about genetic association – are the results of the study valid? *JAMA* 2009;**301**:191–197.
4. **Attia J,** Ioannidis JP, Thakkinstian A, *et al*. How to use an article about genetic association – what are the results and will they help me in caring for my patients? *JAMA* 2009;**301**:304–308.
5. **Omer SB,** Salmon DA, Orenstein WA, *et al*. Vaccine refusal, mandatory immunization and the risks of vaccine-preventable diseases. *N Eng J Med* 2009;**360**:1981–1988.