

for histopathological examination and in situ PCR testing.

**RESULTS:** Histopathological examination confirmed the clinical diagnosis in only 45% of the cases; nonspecific histopathology was reported for the remaining 55% of the cases. In situ PCR showed a positivity of 57.1% in the early/localized form of leprosy (indeterminate/borderline tuberculoid) and 61.5% in the borderline borderline/lepromatous group. When compared with the histopathological examination, a significant enhancement of 15% in diagnosis was seen. With in situ PCR, the diagnosis could be confirmed in 4 (36.3%) of 11 cases with nonspecific histopathological features (which is common in early disease) in addition to confirmation of 8 (88.8%) of 9 histopathologically confirmed tissue sections. Histopathology and in situ PCR combined together confirmed the diagnosis in 13 (65%) of the 20 cases.

**CONCLUSIONS:** In situ PCR is an important diagnostic tool, especially in early and doubtful cases of leprosy.

## DETECTION AND MOLECULAR SEROTYPING OF GROUP B *STREPTOCOCCUS* IN FATAL NEONATAL PNEUMONIA IN CHINA

Submitted by Jianghong Deng

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**INTRODUCTION:** Group B *Streptococcus* (GBS) has been recognized as an important pathogen in neonatal infectious disease. However, there are few data on the prevalence of neonatal GBS infection in China.

**OBJECTIVE:** Our aim was to estimate the infection rate of GBS in neonatal pneumonia in China and identify distribution of the GBS serotype.

**METHODS:** We retrospectively studied 200 children with fatal neonatal pneumonia who died between 1953 and 2004; 34 fatal neonatal cases without any infectious disease were used as a control group. Paraffin-embedded lung tissues were collected for total genomic DNA extraction. Polymerase chain reaction (PCR) and Southern blotting were used for GBS detection and molecular serotyping.

**RESULTS:** (1) The positive rate of GBS in the pneumonia group was significantly higher than that in the control group (PCR: 26% vs 3% [ $P < .01$ ]; Southern blot: 65% vs 18% [ $P < .01$ ]). (2) The positive rate in neonates younger than 7 days was significantly higher than that in neonates older than 7 days (PCR: 37% vs 13% [ $P < .01$ ]; Southern blot: 72% vs 52% [ $P < .05$ ]). (3) Risk factors were identifiable for most GBS-positive cases. (4) In the pneumonia group, 22 GBS-positive cases were serotypeable: 7 cases were identified as serotype Ia, 6

cases were serotype III, 5 cases were serotype II, and 1 case was serotype Ib.

**CONCLUSIONS:** In China, GBS is an important pathogen in fatal neonatal pneumonia, especially in early-onset cases. Serotypes Ia, III, and II were the most common serotypes identified.

## PERIPHERAL BLOOD COUNT FOR DENGUE SEVERITY PREDICTION: A PROSPECTIVE STUDY IN THAI CHILDREN

Submitted by Nanthakorn Eu-Ahsunthornwattana

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**INTRODUCTION:** Dengue viral infection has a wide range of severity levels and requires different levels of medical attention. Early severity prediction using clinical features is difficult. Certain lymphocytic subtypes can be used to predict severity; we postulate that peripheral blood counts can also predict severity, which would be more useful in smaller rural hospitals.

**OBJECTIVE:** We aimed to compare the peripheral blood counts between patients with mild dengue infection and those with severe dengue infection and identify simple yet sensitive early severity predictors.

**METHODS:** We enrolled 91 patients with serologically confirmed dengue infection who were admitted to King Chulalongkorn Memorial Hospital. Their leukocytic counts on admission were compared. Potential predictors were identified by using receiver-operating-characteristic analysis.

**RESULTS:** Compared with patients with mild infection, those with severe infection (dengue hemorrhagic fever grade II or worse) had a higher leukocyte count (3580 vs 3050 cells per  $\mu\text{L}$ ;  $P = .04$ ), and fewer had leukopenia on admission (70% vs 89%;  $P = .03$ ). They also had a lower percentage of "typical" lymphocytes (24% vs 40%;  $P = .02$ ). Two predictors were identified; either one classified ~19% of all admitted patients as being at low risk. Typical lymphocyte counts of  $<40\%$  excluded patients with mild disease with 89% sensitivity and 24% specificity (negative predictive value: 77%; positive predictive value: 45%). A combination of parameters [(white blood cells per  $\mu\text{L}$ ) + 470  $\times$  (% typical lymphocytes) + 5  $\times$  (atypical lymphocytes per  $\mu\text{L}$ )  $\geq -14\ 950$ ] improved the sensitivity and specificity to 92% and 26% (negative predictive value: 82%; positive predictive value: 46%).

**CONCLUSIONS:** The absence of leukopenia and a low percentage of typical lymphocytes predict severe dengue illness. Simple hematologic parameters may be used to reduce unnecessary admissions of patients with sus-

pected dengue infection in the absence of more sophisticated predictors.

## SPECTRUM AND MANAGEMENT OF OTITIS MEDIA IN AUSTRALIAN INDIGENOUS AND NON-INDIGENOUS CHILDREN: A NATIONAL STUDY

Submitted by **Hasantha Gunasekera**

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**INTRODUCTION:** The reported prevalence and severity of otitis media are highest among the world's Indigenous children, but whether their clinical management varies accordingly is unknown.

**OBJECTIVE:** Our aim was to study the spectrum and management of otitis media in Indigenous and non-Indigenous children in Australia.

**METHODS:** From a representative Australian cluster survey of consecutive primary health care consultations, we analyzed all consultations with children (aged 0–18 years). We compared the practitioners' investigation, treatment, and referral practices for Indigenous and non-Indigenous children with otitis media after adjusting for clustering.

**RESULTS:** Over 8 years (1998–2006), 7991 practitioners managed 141 693 problems in 119 503 consultations with children, including 2856 (2.4%) with Indigenous children. Ear problems were the fourth most common problems managed. Otitis media was managed slightly more commonly in Indigenous than non-Indigenous children (9.8% vs 7.3% consultations;  $P < .05$ ). When otitis media was diagnosed, Indigenous children were significantly more likely to have severe otitis media (chronic and/or suppurative and/or perforation: 7.9% vs 1.7%;  $P < .001$ ), discharging ears (3.9% vs 0.1%;  $P < .001$ ), ear swabs (3.9% [95% confidence interval (CI): 1.6–6.2] vs 0.8% [95% CI: 0.6–0.9]), and topical ear-drops administered (10.7% [95% CI: 6.8–14.6] vs 4.5% [95% CI: 4.1–5.0]) but not more likely to receive oral antibiotics (71.8% vs 75.9%), have ear syringing (1.1% vs 0.2%), or be referred to an otolaryngologist (6.1% vs 3.4%) or audiologist (1.8% vs 1.1%) (all  $P > .05$ ).

**CONCLUSIONS:** In the Australian primary health care setting, Indigenous children are 5 times more likely to be diagnosed with severe otitis media than non-Indigenous children, but reported management is not substantially

different, which is inconsistent with established national guidelines. This spectrum-management discordance may contribute to continued worse outcomes for Indigenous children with otitis media.

## SEROLOGICAL STUDY ON IMMUNITY TO MEASLES AND MUMPS IN NORTHERN GREEK CHILDREN

Submitted by **Katerina Haidopoulou**

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**INTRODUCTION:** Routine immunization against measles and mumps has substantially reduced the number of these infections annually. However, outbreaks have been reported recently, even in highly vaccinated populations.

**OBJECTIVE:** Our goal was to determine the levels of serum antibodies against measles and mumps in a population of children who were vaccinated against measles-mumps-rubella (MMR).

**METHODS:** The study population consisted of 260 healthy children (aged 15 months to 14.5 years) who were separated into 2 groups according to the number of MMR vaccine doses previously administered: groups A (1 dose) and B (2 doses). Immunoglobulin G (IgG) and IgM antibody levels for measles and mumps were determined in blood serum by the enzyme-linked immunosorbent assay (Genzyme Virotech, Rüsselsheim, Germany) semiquantitative method.

**RESULTS:** Groups A and B consisted of 53 children aged 15 months to 8 years and 207 children aged 5 to 14.5 years old, respectively. A majority (93.08%) of the children were protected against measles. Group A and B protection rates were similar (92.27% and 96.23%, respectively). Although most of the children were protected against mumps, the total protection rate was significantly less (81.92%) ( $P < .01$ ). The protection rate against mumps in group A was significantly lower than that in group B (67.92% vs 85.51%;  $P < .03$ ).

**CONCLUSIONS:** Our results indicate high protection rates against measles conferred even by a single dose of the MMR vaccine. A respected percentage of the children were found to be susceptible to mumps even after completion of a 2-dose immunization schedule. Primary vaccine failure may be implicated as a cause of recent mumps outbreaks, but additional studies are needed.

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