## A patient's story

J, aged 2 years and 6 months, became unwell over 12 hours with fever and vomiting. His parents found two petechial spots. They recognised these as non-blanching and brought him to the emergency department at midnight. On arrival, he was irritable and unwell but afebrile. He was tachycardic (150/minute) and normotensive, with a prolonged capillary refill time (more than 4 seconds). He had oxygen saturations of 100% in air and was breathing normally. Over the next hour a petechial and purpuric rash evolved all over his body. Venous access was established, and he was given intravenous cefotaxime within half an hour of arrival, followed by two boluses each of 20 ml/kg saline. An arterial line was sited, and he was transferred to the high dependency unit. His C reactive protein was moderately raised (58 mg/l) and his white cell count and differential were normal, but clotting studies were abnormal (platelets 146×10<sup>9</sup>/l, international normalised ratio 1.5, prothrombin time ratio 2.3, with raised fibrinogen resulting from disseminated intravascular coagulation). His condition stabilised but then deteriorated steadily four hours later; he was ventilated and admitted to a paediatric intensive care unit 11 hours after the original admission. Before transfer, he needed resuscitation with 350 ml/kg fluid intravenously (normal saline, albumen 4.2%, fresh frozen plasma, and blood because of supervening anaemia, totalling more than four times his circulating blood volume since admission). Inotropes (dopamine, then dobutamine and adrenaline) were started. He was treated with haemofiltration for several days in intensive care. Blood culture was positive, and polymerase chain reaction confirmed Meningococcus serogroup B, serotype 15, subtype P1.4. He needed treatment for extensive skin scarring later, but he recovered fully and had no neurological detriment two years afterwards.

> serogroup A organisms. Travellers to this area and pilgrims on the annual Hajj to Mecca are advised to be immunised against serogroup A disease. Vaccines for group B disease suitable for routine use in young children have not so far been developed. The possibility of protection against meningococcal disease by blocking pharyngeal binding with Neisseria lactamica is intriguing, we but it only tackles one aspect of the predisposing conditions for meningococcal infection.

> Competing interests: Both authors have received research grants from the Meningitis Research Foundation. APJT acts as an expert witness (for claimants and defendants) on cases of meningococcal disease and meningitis.

- Thomson APJ, Riordan FAI. The management of meningococcal disease.
- Current Paediatrics 2000;10:104-9.

  Molesworth AM, Thomson MC, Connor SJ, Creswell MP, Morse AP, Shears P, et al. Where is the meningitis belt? Defining an area at risk of epidemic meningitis in Africa. Epidemiol Infect 2002;96:242-9.
- Yazdankhah SP, Caugant DA. Neisseria meningitidis: an overview of the carriage state. *J Med Microbiol* 2004;53:821-32.
- Kvalsvig AJ, Unsworth DJ. The immunopathogenesis of meningococcal disease. J Clin Pathol 2003;6:417-22. Health Protection Agency. Laboratory reports of invasive meningococcal
- infections, England and Wales: weeks 50-53/2004. CDR Whly (Online)
- Gray SJ, Trotter CL, Ramsay ME, Guiver M, Fox AJ, Borrow R, et al. Epidemiology of meningococcal disease in England and Wales 1993/94 to 2003/04 : contribution and experiences of the Meningococcal Reference Unit. J Med Microbiol 2006;55:887-96.
- Health Protection Agency. Laboratory reports of invasive meningococcal infections, England and Wales: weeks 01-05/2005, 06-10/2005. CDR
- Wkly (Online) 2005;15(25).
  Hackett SJ, Guiver M, Marsh J, Sills JA, Thomson APJ, Kaczmarski EB, et al. Meningococcal bacterial DNA load at presentation correlates with disease severity. *Arch Dis Child* 2002;86:44-6.
- Hackett SJ, Thomson APJ, Hart CA. Cytokines, chemokines and other effector molecules involved in meningococcal disease. J Med Microbiol
- 2001;50:647-59.
   Makwana N, Baines PB. Myocardial dysfunction in meningococcal septic shock. *Curr Opin Crit Care* 2005;11:418-23.
   Riordan FAI, Thomson APJ, Sills JA, Hart CA. Who spots the spots? The diagnosis and treatment of early meningococcal disease in children. *BMJ* 1000;13:10.000. 1996:313:1255-6.
- 12 Wells LC, Smith JC, Weston VC, Collier J, Rutter N. The child with a nonblanching rash: how likely is meningococcal disease? Arch Dis Child 2001;85:218-22.
- 13 Marzouk O, Thomson APJ, Sills J, Hart CA, Harris F. Features and outcome in meningococcal disease presenting with maculopapular rash. Arch Dis Child 1991;66:485-7.

- 14 Thompson MJ, Ninis N, Perera R, Mayon-White R, Phillips C, Bailey L, et al. Clinical recognition of meningococcal disease in children and adoles-
- cents. Lancet 2006;367:397-403.
   Richards C, Thimm A, Clark J, Thomson APJ, Newton T, Riordan FAI. The management of fever and petechiae: collaborative studies are needed. Arch Dis Child 2001;85:172.
- 16 Chief Medical Officer. Meningococcal infection. London: Department of Health, 1999 (PL/CMO/99/1).
- 17 Correia JB, Hart CA. Meningococcal disease. Clin Evid 2004;12:1164-81.
   18 Harnden A, Ninis N, Thompson M, Perera R, Levin M, Mant D, et al. Parenteral penicillin for children with meningococcal disease before hospital admission. BMI 2006:332:1295-8.
- 19 Hackett SJ, Carrol ED, Guiver M, Marsh J, Sills JA, Thomson APJ, et al. Improved case confirmation in meningococcal disease with whole blood Taqman PCR. Arch Dis Child 2002;86:449-52.
- Ninis N, Phillips C, Bailey L, Pollock JI, Nadel S, Britto J, et al. The role of healthcare delivery in the outcome of meningococcal disease in children: case-control study of fatal and non-fatal cases. *BMJ* 2005;330:1475-8.
   Riordan FAI, Marzouk O, Thomson APJ, Sills JA, Hart CA. Prospective
- validation of the Glasgow meningococcal septicaemia prognostic score: comparison with other scoring methods. Eur J Pediatr 2002;161:531-7.
   Pathan N, Sandiford C, Harding SE, Levin M. Characterization of a myocardial depressant factor in meningococcal septicemia. Crit Care Med
- 2002;30:2191-8
- 23 Carrol ED, Thomson APJ, Hart CA. New therapies and vaccines for meningococcal disease. *Expert Opin Investig Drugs* 2001;10:1487-500.
   24 Derkx B, Wittes J, McCloskey RV, European Pediatric Meningococcal Septic Shock Trial Study Group. A randomised placebo-controlled trial of HA-1A, a human monoclonal anti-endotoxin antibody, in children with meningococcal septic shock. Clin Infect Dis 1999;28:770-7.
- 25 Levin M, Quint PA, Goldstein B, Barton P, Bradley JS, Shemie S, et al. Recombinant bactericidal/permeability-increasing protein (rBPI21) as adjunctive treatment for children with severe meningococcal sepsis: a randomised trial. *Lancet* 2000;356:961-7.
- 26 Thorburn K, Baines P, Thomson A, Hart CA. Mortality in severe meningococcal disease. Arch Dis Child 2001;85:382-5.
- 27 Fellick J, Sills JA, Marzouk O, Hart CA, Cooke RWI, Thomson APJ. Neurodevelopmental outcome in meningococcal disease: a case-control study. Arch Dis Child 2001;85:6-11.

(Accepted 5 September 2006)

doi 10.1136/bmj.38968.683958.AE

## Corrections and clarifications

Evidence based diagnosis: does the language reflect the

We introduced an error into figure 1 of this analysis and comment article by Matt T Bianchi and Brian M Alexander (BMJ 2006;333:442-5, 26 Aug). When we redrew the figure that the authors had supplied, we omitted a zero from the three likelihood ratios at the lower end of the scale; the correct values should be 0.001, 0.002, and 0.005.

Effectiveness of discontinuing antibiotic treatment after three days versus eight days in mild to moderate-severe community acquired pneumonia: randomised, double

The authors of this paper, Rachida el Moussaoui and colleagues, have alerted us to some small errors they made when writing their article (BMJ 2006;332:1355-8, 10 Jun). These occurred in table 2 of the full version text on bmj.com and in the accompanying text. In the per protocol analysis on day 10 the difference between the two arms should be -0.7% (-10% to 9%) [not 0.1% (-9% to 10%)], and in the per protocol analysis on day 28 the difference should be 3% ( – 9% to 15%) [not 2%(-9% to 15%)]. However, the authors confirm that the text is correct in explaining these differences and that the conclusions drawn are not affected by the errors.

## Obituary: Fred Mosteller

In this obituary by Caroline Richmond we were wrong about Fred Mosteller's cause of death (BMJ 2006;333:399, 19 Aug). He did not die from diabetes (nor did he have diabetes); he died from