Meningococcal meningitis manifesting as hydrocephalus: a clinical dilemma

This case study highlights the importance of considering meningococcal meningitis in children presenting with acute neurological findings.

**INTRODUCTION**

Meningitis is an inflammatory response to infection of the leptomeninges and the subarachnoid space. Meningococcal meningitis usually presents acutely with high fever, photophobia, neck stiffness with or without petechial rash suggestive of septicaemia. It can present with acute neurological signs such as cerebellar ataxia, psychosis and hydrocephalus, which can create a diagnostic dilemma.

This case describes a baby presenting with neurological signs and hydrocephalus.

**Presentation and initial management**

A 5½ month old, fully immunised baby boy presented with a five day history of intermittent neck and back arching, poor feeding and being generally unwell.

Three weeks earlier, he was healthy and developing well. In the intervening weeks, he had been diagnosed with a viral infection on three occasions, which retrospectively raised suspicion of an evolving meningitis.

On the day of presentation he had two unresponsive episodes, with floppiness and unresponsiveness to stimuli. He vomited once and stopped breathing five times. He was drowsy and had hyperextended posture, altered responsiveness and twitching of all limbs.

His temperature was 36°C, respiratory rate 52/min, pulse rate 133bpm, saturations 95% in air, blood pressure 140/80mmHg, central capillary refill time 3–4 seconds and bedside glucose 7.1mmol/l. His Glasgow Coma Scale score was 10/15. There was no rash.

High flow oxygen and fluid resuscitation of 20ml/kg normal saline were administered. Rectal diazepam was given for his agitation. He continued to have respiratory difficulties and required intubation and ventilation. After extubation on the first day, he was transferred to the paediatric intensive care unit.

**Management**

The baby’s airway was stable so he was not intubated. His blood inflammatory markers were raised. His sodium level was 121mg/l and he received 3% sodium chloride correction (hypertonic saline).

**Practice points**

- Atypical presentations of meningococcal meningitis should be considered in a child presenting with acute neurological findings.
- Meningococcal meningitis occurs without septicaemia.
- Raised intracranial pressure (Ninis et al, 2007; Advanced Life Support Group, 2005) should be considered in a child with irritability, poor feeding or emesis, split skull sutures (especially lambdoid), bulging fontanelle, altered mental status, seizures or Parinaud’s syndrome (a sign of acute obstructive hydrocephalus).
- Lumbar puncture may need to be delayed if a child is unstable and/or their Glasgow coma scale score <13/15 (Ninis et al, 2007; ALSG, 2005).
- Hydrocephalus, which is caused by the inflammatory process with meningitis, obstructs the circulation of cerebrospinal fluid, which raises intracranial pressure.

Urgent brain CT scanning was performed. During the scan, he had a prolonged generalised tonic clonic seizure requiring IV lorazepam. The scan (Fig 1) showed a communicating hydrocephalus, possibly due to meningitis. Continuing care was provided in the paediatric high dependency unit.

Lumbar puncture showed a raised white blood cell count and 80% polymorphs. He was treated with high dose IV cefotaxime and fluid restriction. A cerebrospinal fluid culture confirmed Neisseria meningitidis group B. Meningococcal infection accounts for almost 50% of meningitis cases in children (Davison and Ramsay, 2003).

The baby was transferred to the paediatric intensive care unit at a tertiary centre for intubation and ventilation. After extubation at two days, he was transferred back to complete 14 days of IV cefotaxime.

Rifampicin prophylaxis was arranged for close contacts. About one in 10 people carry meningococcal bacteria in their nasopharynx with no ill effects (Davison and Ramsay, 2003).

**Progress**

The baby developed seizures after a week that involved blinking and/or arm stiffening. He was started on oral carbamazepine, which is being continued, and is stable. He is under the care of a local paediatrician and the paediatric neurologist at the tertiary centre. He showed normal development at 10 months and is making satisfactory progress.

**Conclusion**

This case shows the importance of being aware of atypical presentations of meningococcal meningitis as well as the airway, breathing, circulation, disability and exposure (ABCDE) approach to a seriously ill child with an uncertain diagnosis (ALSG, 2005).

**References**
