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 acute neurological signs and hydrocephalus.

At presentation the baby was febrile and had hyperextended posture, altered responsiveness and twitching of all limbs. His temperature was 36°C, respiratory rate 52/min, pulse rate 135bp/min, 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 generalised seizure. Medical assessment revealed acute neurological signs and a bulging anterior fontanelle.

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).

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 cell count of 1650 cells/mm3 with 90% polymorphs. A cerebrospinal fluid culture confirmed Neisseria meningitidis B. Meningococcal meningitis 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 intubation at two days, he was transfereed 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).

IMAGES

Figure 1: Communicating Hydrocephalus

PRACTICE POINTS

- Atypical presentations of meningococcal meningitis should be considered in a child presenting with acute neurological findings.
- Meningococcal meningitis occurs without septicemia.
- 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 lamboid), bulging fontanelle, altered mental status, seizures or Parinaud’s syndrome (a sign of acute obstructive hydrocephalus).
- Intubation may protect the airway during scanning and can have some neurological benefits (Ninis et al, 2007).
- Consider intraosseous needle insertion if rapid access is required (Ninis et al, 2007; ALSG, 2005).
- 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.

REFERENCES


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