Royal College of Anaesthetists

Abusive Head Trauma in Babies and Young Children – A Brief Guide for Anaesthetists

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Background

Anaesthetists may be called upon urgently to attend the Emergency Department (ED) to assist with resuscitation, stabilisation and transfer of babies and children with severe head trauma. The priorities of airway management, respiratory control and circulatory support are important regardless of aetiology; however it is also vital for anaesthetists to be aware of the fact that in particular in babies and young children the possibility of deliberate harm must be considered.

An underlying brain injury may also present with less urgent symptoms, eg seizures or apnoea. These patients should be fully investigated and anaesthetists are not infrequently called upon to assist with airway control sedation or anaesthesia for CT/MRI. Again, the possibility of abusive head trauma may need to be considered and appropriate action taken to safeguard this and any other children within the family.

This short article summarises the epidemiology of abusive head trauma, outlines basic medical management and importantly describes the general course of action for paediatricians who address the safeguarding issues. Other team members, eg ED, surgery and anaesthesia are also often closely involved and hence need background knowledge of this topic.

Vignette: A 4 month old baby was brought to the children's assessment unit by his parents due to lethargy and vomiting. Parents report he had been in the care of the childminder until that afternoon and began vomiting shortly after being collected. There was no history of fever, viral symptoms or trauma. The child was mildly pale, sleepy but arousable, observations were within normal range, brief neurological exam was normal. An initial diagnosis of suspected sepsis was made and IV antibiotics given. Lumbar puncture attempted x2 but both taps were heavily bloodstained. He then suffered a short seizure, witnessed by nursing staff and parents. The on call anaesthetist and intensivist were informed of the deterioration and CT under GA was performed and revealed large, bilateral subdural haemhorrages. Following this, safeguarding procedures were initiated. The child suffered a further seizure and hence transfer to paediatric neurosurgical unit was arranged. The baby remained intubated for transfer and held on ITU under the joint care of paediatrics and critical care until the retrieval team arrived. The haemorrhages were managed conservatively on PICU and he was later discharged into foster care.

Definitions

Abusive head trauma (AHT) includes inflicted cranial, cerebral, and spinal injuries resulting from blunt trauma, shaking, or a combination of forces
In its most severe form the term has broadly replaced the term 'Shaken Baby Syndrome', which incorporates the features of encephalopathy, subdural/subarachnoid haemorrhage and retinal haemorrhages.

Epidemiology

Over 58,000 children were considered at risk of harm and 60 children died as a result of child abuse in England in 2015. AHT is the most common cause of death in child abuse cases. 80% of all fatal head injuries in children under 2 years involve AHT.

The majority of cases are in children under 2 years old but have been reported in children up to 5 years. Peak incidence is in babies around 2-3 months old.

There are many historical risk factors for abusive injury, the most significant being history of domestic violence, substance misuse and mental illness in the parents or caregivers.

Fatality from AHT is thought to exceed 20%. Long term medical sequelae can be severe and permanent. These include cerebral palsy, blindness, severe learning disability, endocrine abnormalities and behavioural problems. There will also be significant social implications if the caregiver is involved in the abuse.

Presentation
One study has suggested that due to lack of clinical suspicion or history taking, as many as 30% of cases of abusive head trauma are initially misdiagnosed and the patient discharged[1].

In the most severe cases children may present with evidence of respiratory compromise, seizures, or coma. In these situations a child is more likely to be accurately diagnosed with abusive head trauma.

However, a significant number of babies with AHT present with mild or nonspecific symptoms, including poor feeding, lethargy, or irritability. A working diagnosis of sepsis would not be unusual in babies with this presentation and investigations such as lumbar puncture may be required during the initial assessment - the finding of bloodstained CSF may be an important clue to the diagnosis.

If AHT is suspected, fundoscopy should be performed as retinal haemorrhages are often found in AHT and increase the likelihood of non-accidental injury. The most concerning are extensive, bilateral, and extend out to the periphery of the retina. The finding of "retinoschisis" (splitting of the retina's neurosensory layers) is considered pathognomonic for a shaking injury.

Initial Management
Initial management of any collapsed or unwell child should always follow the usual airway, breathing, circulation algorithm. This involves a team approach and is generally led by a senior paediatrician in a small baby.

Age appropriate assessment of neurological disability should be performed and in babies will include looking for visual following, grasp and suck reflexes and response to pain.

The child should be completely undressed and examined top-to-toe. Any injuries should be clearly documented including measurements and if possible photographed via medical photography. This is most likely to be done by paediatricians, however specific parts of the examination may be relevant to anaesthetists during airway management – eg being vigilant and making sure there is recording and describing intra-oral and facial injuries.

The child may not infrequently require anaesthesia for neuroradiology (CT or MRI) so making them nil-by-mouth is advisable until a definite decision is made.

The detailed history and examination will be made by a paediatrician; however anaesthetists and intensivists may be involved in discussions with the family, particularly if the child requires a stay in critical care. Any history given to team members by the caregivers should be accurately recorded, including who said what, and a timeline of events but without adding opinion i.e. without attributing causation. In those with severe injuries early communication with PICU, neurosurgeons and any relevant transfer teams is required and may necessitate direct transfer by the local team if there are concerns about raised intracranial pressure.

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[1] Jenny C, et al. Analysis of Missed Cases of Abusive Head Trauma. *JAMA*.1999;281(7):621–626. doi:10.1001/jama.281.7.621 https://jamanetwork.com/journals/jama/fullarticle/188786

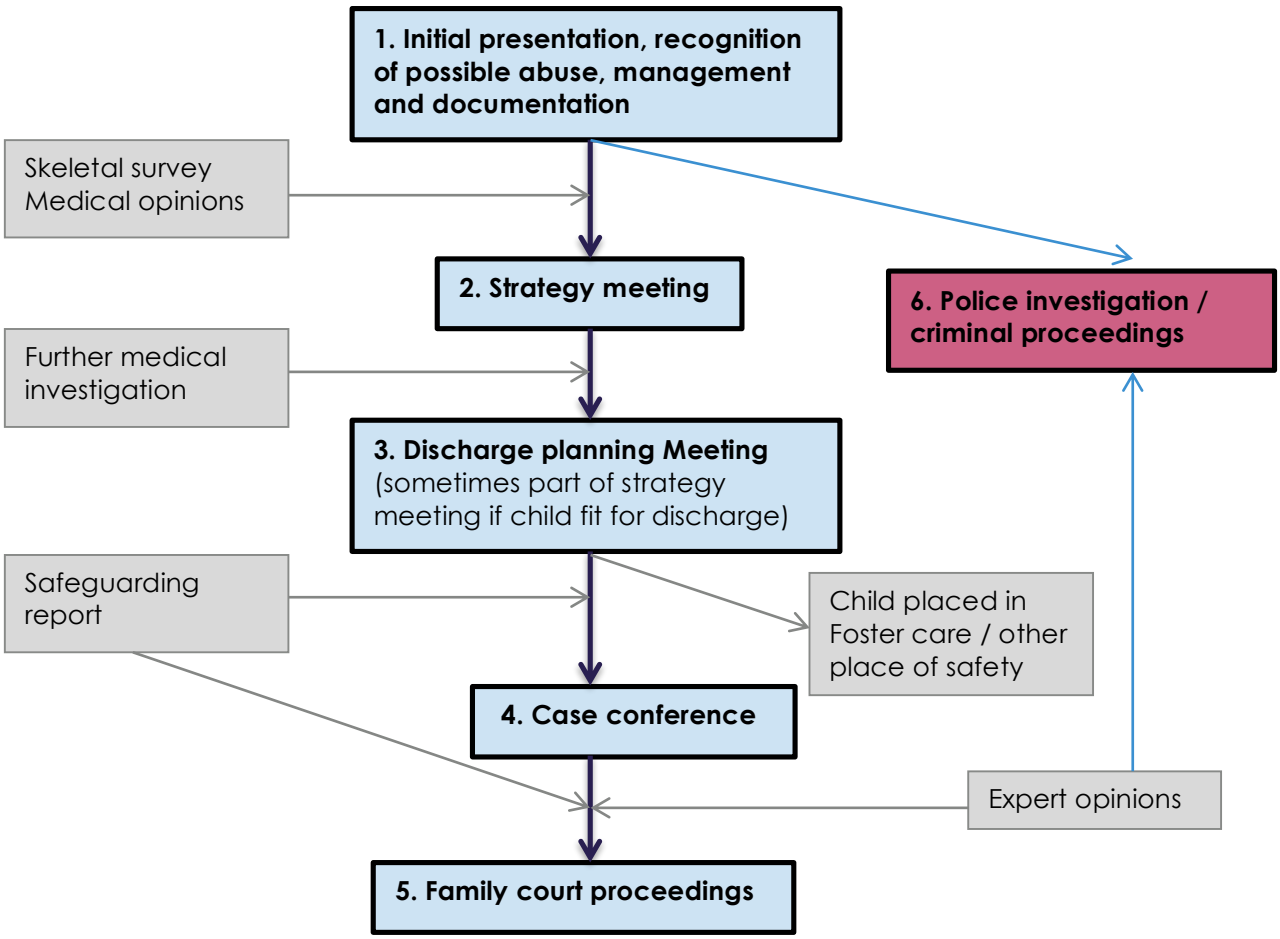
Although surgical intervention is not always necessary, if abusive head trauma is suspected, it is important to consider occult abdominal trauma and/or fractures to other bones which may require urgent assessment.

If AHT or any other form of non-accidental injury is suspected, the child will require further investigation. A skeletal survey should be arranged to screen for other acute or historical bony injuries. Additional blood tests to check for underlying medical issues will be needed – these include FBC, clotting screen, bone, liver and kidney profiles. Further, more specific investigations may be required later following specialist advice, dependent on the nature of the injury.

It is important for all medical professionals to remain aware that even in these emotionally challenging cases, the focus of medical assessment is the clinical condition and needs of the child, and not about who may have caused the harm or why. Whatever their involvement in the events leading up to the injury, parents are likely to be distressed to see their child acutely unwell. As such, they should be treated with the same professionalism, empathy and consideration as any other parent.

Safeguarding management – the role of anaesthetics

Although the majority of safeguarding assessment and management will be undertaken by the paediatric team, it is possible (e.g. particularly when there are no paediatricians initially on site) that input and information from anaesthetists and ED staff may be requested, either at the initial assessment or later during further investigation and/or court proceedings. Hence a basic knowledge of the process and when you may be involved is necessary.



1. **Initial Assessment**
   Most hospitals will have specific paperwork to be completed including history and examination when a child first arrives with any safeguarding concerns. ***In a seriously unwell child where the anaesthesia service has been very involved (resuscitation/stabilising in ED or on ICU), or where any information was given by the parents solely to the anaesthetist, they may be requested to record information in the safeguarding notes.***

2. **Strategy Meeting**
   Multi-professional meeting between health, social services, police, health visitors and any other teams involved to share information and decide on interim action to keep all children in the family safe while information is gathered. ***Again if the anaesthesia or critical care team are heavily involved a senior member of the team may be asked to attend the meeting or provide information.***

3. **Discharge planning meeting** Further multi-professional meeting at time of hospital discharge to decide on discharge placement of child. If anaesthetic teams are involved you may be asked to attend the meeting or provide information.

4. **Case conference** More detailed meeting following time to gather further information / assessment to decide on longer term plan/placement of child.

5. **Family Court Proceedings** to determine the long term best placement of the child (eg permanent foster care / adoption proceedings. NB this is not a criminal investigation. ***Your medical reports and/or information documented in the notes may be used as evidence during proceedings.***

6. **Criminal proceedings** against possible perpetrators of any abusive head injury will run alongside, but separate to any other safeguarding process. ***Information from the medical notes will be reviewed in detail and you may be asked to provide a statement or clarify information you have documented in the notes. Anaesthetists who have been involved in managing the child, particularly at admission/during resuscitation could potentially be asked to appear as witnesses in criminal proceedings. However, it is not the responsibility of the anaesthetist in this context to liaise, at the time of presentation, directly with police or social care.***

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