

### A bump on the head: A simple fall or child maltreatment?

A mother brings her six-week-old son to the emergency department because of a bump on his head. She left him with her boyfriend while she went shopping, and on her return, the baby was crying more than usual. Her boyfriend told her that the baby had rolled off the couch onto the carpeted floor.

On examination, the infant is irritable, with a large right parietal hematoma. The anterior fontanelle is not bulging. The skin is clear. The general and neurological examinations are normal. A skull x-ray shows a depressed fracture of the right parietal bone. A computed tomography scan confirms the skull fracture with overlying soft tissue swelling, as well as acute subdural hemorrhage interhemispherically. The

emergency physician is concerned that this could represent an inflicted head injury and notifies child welfare authorities.

The baby is admitted to hospital and treated for seizures on the second day. Subsequent investigations reveal bilateral retinal hemorrhages at different levels and a metaphyseal fracture of the right distal femur. Child welfare and police investigations determine that the boyfriend injured the baby. The physician agrees that the injuries are not compatible with the history as reported, but consistent with inflicted trauma, and that the baby has no predisposition to bleeding or fractures. After five days, the baby is discharged home with his mother with ongoing support from child welfare and the community physician.

#### LEARNING POINTS

- The incidence of head injuries secondary to child maltreatment in Canada is not known. In the first eight months of the CPSP study, 89 cases were reported, with 32 confirmed inflicted head injuries.
- Child abuse is the most common cause of serious head injuries in children younger than one year. While most inflicted head injuries occur in infants and toddlers, similar injuries can occur in older children.
- Inflicted head injuries can present with nonspecific signs (irritability, lethargy, poor feeding, vomiting or respiratory difficulties) or with specific neurological signs (seizures and decreased level of consciousness).
- Significant head injuries can be present even when a child has a normal neurological examination and no external signs of trauma.
- Misdiagnosis of inflicted head injuries is common. The most common incorrect diagnoses are viral gastroenteritis, influenza, accidental head injury and possible sepsis. Making a correct diagnosis of child maltreatment early helps to protect the child and his or her siblings from further maltreatment.
- Simple falls from low heights rarely cause significant head injury. They can cause scalp bruising, nondepressed linear skull fractures, and occasionally, epidural hematomas or focal subdural hemorrhages. However, these injuries can also be seen in inflicted head injuries. Symptomatic intracranial hemorrhages and nonfocal subdural hemorrhages are generally not seen with simple falls and require further investigation for the possibility of maltreatment.
- Inflicted head injuries in young children have devastating outcomes. Death occurs in 10% to 30%, and the majority of survivors are left with neurological and/or visual impairments.
- All physicians have a duty to report to child welfare authorities if they suspect child abuse or neglect.

*The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and Public Health Agency of Canada that undertakes the surveillance of rare diseases and conditions in children. For more information visit our Web site at <[www.cps.ca/cpsp](http://www.cps.ca/cpsp)> or <[www.cps.ca/pcsp](http://www.cps.ca/pcsp)>.*