Australian Paediatric Surveillance Unit
STUDY PROTOCOL

COMMENCING July 2010

Subdural Haematoma and Effusion in Children < 2 years

BACKGROUND

Subdural haematoma and effusion (SDH/E) is a rare but significant cause of morbidity and mortality in infancy. SDH/E has been described in neonates after traumatic delivery and in a very small group of infants it has been described prior to birth as a result of trauma *in utero*. Other causes may include accidental trauma due to falls or motor-vehicle accidents, congenital malformations, inborn errors of metabolism, or coagulopathy.

Sadly the most commonly reported cause of SDH/E in children aged < 2 years is inflicted non-accidental injury. Studies from overseas[1-3], and an Australian study based on an audit of admissions to the Children's Hospital at Westmead[4], have shown that SDH/E is predominantly due to inflicted non-accidental injury. Hallmark signs include: retinal haemorrhages and the presence of intracranial haemorrhages of different ages. Other intracranial injuries including subgaleal bleeding, intracerebral bleeding, cerebral oedema and axonal shearing injury may also be present. Multiple skeletal injuries are also common and may include fractures or contusions of the ribs, metaphyses of long bones, skull, vertebrae, and almost any other site. History of family disruption, substance abuse and deprivation is commonly reported.

Outcome following SDH/E is poorly reported, but one study suggests that neuro-developmental impairment is likely in at least 20% of survivors, this leading to life-long consequences[5,6]. In our study outcome will be determined at the time of discharge and at 6 months. Such data is likely to support the development of future research including longitudinal cohort studies to determine the longer-term health and social consequences of SDH/E among Australian children.

Paediatric Surveillance Units in Britain and in New Zealand have estimated the incidence of SDH/E in children aged < 2 years at 12.5/100,000 in the United Kingdom[1] and 14.7/100,000 in New Zealand[2] . In a Scottish study[3] of infants aged < 1 year, it was 24.6/100,000. There are no national data on SDH/E in Australian children, and this study will provide the first national estimate of the incidence of SDH/E and its causes. Based on the incidence reported in Britain and in New Zealand, and an estimated Australian population of 563, 800 children < 2 years, we expect ~60 cases per year. The case definitions and questionnaires used in our study are based on methods and materials used successfully in Britain and in New Zealand.

International literature recognises the difficulties that face clinicians when considering a diagnosis of inflicted brain injury, and the involvement of child protection teams and child protection statutory agencies.[1-6] Infants often initially present with no history of injury or a history of only trivial trauma and the true history may only come to light at a later date. Our study will provide information on the presentation and diagnosis of SDH/E to inform clinical practice when investigating young children presenting with signs and symptoms of SDH/E, and may also inform educational materials for clinicians as well as community awareness campaigns to prevent SDH/E.

STUDY OBJECTIVES

We aim to determine the incidence of SDH/E in Australian children aged < 2 years and to describe the following:

- Causes of SDH/E
- Demographics of children presenting with SDH/E
- Presenting symptoms, associated medical conditions and injuries, investigations, treatments, and referral patterns
- Outcome at discharge from hospital and at six months

CASE DEFINITION

Please report any child aged < 2 years and newly diagnosed with a subdural haematoma or effusion (SDH/E) as confirmed by CT, MRI, head ultrasound, subdural tap or on post-mortem examination.

FOLLOW-UP OF REPORTED CASES

A 2-page questionnaire requesting further details will be forwarded to clinicians who report a case of subdural haematoma/effusion. An additional one page questionnaire will be sent 12 months after the initial diagnosis to obtain any additional information about the diagnosis and outcome for the child.

INVESTIGATOR CONTACT DETAILS (*Principal Investigator and contact person)

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