



Abusive head trauma at a tertiary care children's hospital in Mexico City. A preliminary study

Claudia Díaz-Olavarrieta^a, Corina A. García-Piña^{b,*}, Arturo Loredó-Abdala^b, Francisco Paz^c, Sandra G. García^d, Astrid Schilmann^a

^a National Institute of Public Health, Research Center on Health Population, Mexico City, Mexico

^b National Institute of Pediatrics, Insurgentes Sur #3700-C, Colonia Insurgentes Cuicuilco, Coyoacán, Mexico City 04530, Mexico

^c National Institute of Neurology, Mexico City, Mexico

^d Population Council, Mexico City, Mexico

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ABSTRACT

Objectives: Determine the prevalence, clinical signs and symptoms, and demographic and family characteristics of children attending a tertiary care hospital in Mexico City, Mexico, to illustrate the characteristics of abusive head trauma among this population.

Methods: This is a cross-sectional descriptive study of infants and children under 5, who suffered head trauma and were admitted to the National Pediatrics Institute in Mexico City, a tertiary care referral center. We reviewed medical records and extracted data on clinical and neurological signs and symptoms, fundus, radiological (long bones, thorax, CAT scan), and laboratory tests. We administered a standardized questionnaire assessing child abuse and neglect to the parents of the children included in the study.

Results: One hundred and twenty children, under 5 presenting with head trauma, were recruited, 13 (11%) were considered abusive head trauma (AbHT) and 107 (89%) were diagnosed as accidental head injury (Achi). The AbHT group comprised younger infants (mean age 8 months) and the Achi group included toddlers about an average of 25 months. To account for this significant age difference, we performed a comparison of age matched cases. The children in the AbHT were more likely to be female, the result of the first unintended pregnancy and the children of younger mothers (17–19). Mothers in this group had attended fewer than 5 prenatal care visits and fathers had a history of alcohol abuse. Five (38%) of the 13 AbHT children did not survive their injuries and overall showed greater neurological and respiratory compromise, increased prothrombin time (PT), and lower hematocrit values. The most common intracranial injuries suffered by children in the AbHT group were subdural/epidural hematoma and parenchymal/subarachnoid hemorrhage. Retinal hemorrhage was the most frequent ocular injury.

Conclusions: In a tertiary care children's hospital, 11% of the children presenting with head trauma, were considered of abusive origin. Unintended pregnancy among teen mothers and substance abuse in the father were associated with abusive head trauma in this descriptive study.

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* Corresponding author.

Introduction

Child abuse is a global public health problem (McMenemy, 1999; Pinheiro, 2006; World Health Organization, 2002), and related injuries, especially those resulting in head trauma (HT), are a frequent cause of death among children.

The Fourth National Incidence Study of Child Abuse and Neglect (NIS-4) provides updated estimates of the incidence of child abuse and neglect in the USA employing a sentinel survey methodology. More than 1.25 million children (an estimated 1,256,600 children) experienced maltreatment during the NIS-4 study year (2005–2006). This corresponds to 1 child in every 58 in the USA. A large percentage (44%, or an estimated total of 553,300) were abused, while most (61%, or an estimated total of 771,700) were neglected. Most of the abused children experienced physical abuse (58% of the abused children, an estimated total of 323,000) (Sedlak et al., 2010). But the incidence of inflicted head trauma is difficult to determine. However, a study conducted among children in North Carolina suggests that in the USA 3–4 children a day experience severe head injury due to child abuse (Keenan, Runyan, Marshall, Nocera, & Merten, 2004).

In Mexico, injuries associated with head trauma are among the leading causes of hospitalization and death (Dirección General de Información en Salud (DGIS) & Sistema Nacional de Información en Salud (SINAIS), 2009). The Attorney General's Office for the Protection of Children and Family in Mexico receives the reports of child maltreatment and refers these children for medical care. In the year 2002, the Mexican government passed a law criminalizing child abuse and over 30,000 annual maltreatment reports were received between 2003 and 2006. The number increased in recent years, being almost 44,000 reports for the year 2007 and over 50,000 for 2008 (Procuraduría De la Defensa del Menor y la Familia, 2009). These numbers refer to maltreatment, but specific figures for different types of abuse and neglect are not available in our country. In 2000, the National Institute of Statistics, Geography and Informatics (INEGI) conducted a Domestic Family Survey which found that 37% of children 0–4 years live in violent homes (Instituto Nacional de Estadística Geografía e Informática (INEGI), 2000).

Abusive head trauma (AbHT), also known as shaken baby syndrome (SBS), is one of the most severe types of physical abuse resulting in a complex of ocular, intracranial, and other injuries, usually in nursing infants. Recognizing AbHT can be challenging, the mechanisms and resultant injuries of accidental and abusive head injury can overlap and there is no single or simple test to determine the accuracy of the diagnosis (Christian & Block, 2009; Martin et al., 2006). AbHT is not defined as a single coding entity in the International Classification of Diseases (ICD) but there are several codes that are used to count this syndrome (Barlow & Minns, 2000).

In Mexico there is neither a national registry nor statistics on physical child abuse and specifically abusive head trauma, although efforts are made to design such guidelines and develop an Interagency Child Abuse Registry (Loredo-Abdalá et al., 2010). The aim of this study was to describe the prevalence, clinical signs, symptoms, and socio-demographic characteristics of AbHT cases attending a tertiary care hospital in Mexico City.

Methods

Participants

From April 2004 to September 2005, infants and children under the age of 5 presenting with head trauma and admitted to the National Institute of Pediatrics (NIP) emergency room, were selected to participate in the study. The NIP is a tertiary care referral center with longstanding clinical and research expertise in child abuse in Mexico. Parents were informed about the study and we requested informed consent for them and their children to participate. The hospital's institutional review board (IRB) approved the study.

Data collection

Study assessments were performed by a multidisciplinary team of pediatricians, internist-pediatricians, psychologists, child psychiatrists, social workers, and legal counselors trained in child abuse. Participants whose parents signed informed consent were recruited and received comprehensive clinical, neurological, and fundus examinations. Two physicians administered a standardized questionnaire measuring indicators of child abuse and neglect developed at the NIP (Loredo-Abdalá, Trejo, & Castilla-Serna, 2003), and collected socio-demographic information to one or both parents via a face-to-face interview. The screening instrument had been in place since the year 2001. We recorded clinical-radiological discordance (findings did not correlate with the parent's explanation for injury etiology or severity), parents' delay in seeking medical care for their child, their history of child abuse as a victim or perpetrator, substance abuse habits in either parent (alcohol and drugs) (Medina-Mora, Carreno, & De la Fuente, 1998), and whether the child lived with a stepparent. Unintended pregnancy was measured using the following question: *Thinking back to just before you were pregnant, how did you feel about becoming pregnant?* Response options were: (1) I wanted to be pregnant sooner, (2) I wanted to be pregnant later, (3) I wanted to be pregnant then, (4) I didn't want to be pregnant then or any time in the future, (5) I don't know (Brown & Eisenberg, 1995).

During the physical exam, we studied the presence of existing scars and fractures that were not previously recorded in the child's medical record. Poor personal hygiene was noted in children and compared to that of their respective parents as an indicator of neglect.

We included Brain Computed Axial Tomography (CAT scan), to confirm or rule out possible injuries sustained to the intracranial contents and skull, and thorax and long bone skeletal X-rays to identify location and age of fractures. Laboratory

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