

The creation of non-disease: an assault on the diagnosis of child abuse

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The triad of subdural hematoma, retinal hemorrhage and multiple fractures in a child has been extensively documented to strongly suggest non-accidental trauma. Based on confessional evidence, a medical workup excluding diseases that can present with some of these abnormalities, and almost 50 years of scientific medical supportive literature, the diagnosis of abuse is being made with increasing medical certainty [1–7]. The medical community and particularly child protection professionals take extraordinary care before making a diagnosis of intentional, non-accidental trauma and strongly consider alternative diagnoses.

The foundations of medical diagnosis and treatment should be firmly rooted. While there will always remain instances in which the evidence is less than perfect and several diagnostic possibilities are acceptable, it is dishonest and fraudulent to advocate a diagnosis denied by reasonable medical certainty.

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In this ploy, the protagonist says “there is controversy” but as Oliver Wendell Holmes noted, “controversy equalizes fools and wise men—and the fools know it” [8].

This is what is occurring in the diagnosis of child abuse. A small group of individuals has, during depositions and court room testimony [9, 10], perverted cases by using incomplete statements of the facts and unproven hypotheses to obscure the straightforward historical and physical findings utilized to make the diagnosis of child abuse [11–18]. These individuals have utilized unethical methods to create controversy when there should be none.

The role of the medical profession is to protect today's child and future children. The question is not “who did it?” but rather “did the child suffer from non-accidental trauma?”

A remarkably informative course titled “Imaging of Child Abuse: Fact, Fiction and Responsible Action” (4–5 February 2012) was sponsored by The Society for Pediatric Radiology and directed by Drs. Jeannette M. Perez-Rossello and Paul K. Kleinman [19]. Perhaps the most encouraging aspect of the weekend was the active participation of scientists, lawyers, and physicians of various clinical expertise. The course was preceded by a 1-day discussion between the speakers and other invited experts. The following day-and-a-half seminar (Table 1, course outline) presented the scientifically accepted methodology for the diagnosis of non-accidental trauma with emphasis on the pathophysiology of various injuries, and covered areas where new data have changed our understanding (e.g., subdural hematoma can occur from bleeding dural veins and not only bridging veins) [20–22]. The differential diagnosis of the various injuries was emphasized and appropriate workup of these children was presented.

There is no controversy that child abuse is real and deadly. In 2009, approximately 150,000 children were confirmed with physical abuse and 1,770 died [23]. As a

Table 1 Imaging of child abuse course program

Presenter	Presentation
Perez-Rossello JM	Welcome and introduction
Block RW	Child abuse pediatrics and pediatric radiology: a historic collaboration serving the interests of children
Section I: The skeleton	
Kleinman PK	Common abusive skeletal injuries (long bones, ribs, skull): what is our knowledge base?
Servaes SE	Differential diagnosis of abusive skeletal injuries
Holm I	Biochemical rickets: what does low vitamin D mean in infants?
Perez-Rossello JM	Radiologic diagnosis of rickets
Section II: Abusive head trauma	
Hymel KP	History and clinical presentation of abusive head trauma
Hedlund GL	Extra-axial collections
Grant PE	Brain and cervico-medullary injury: imaging patterns and mechanisms
Hedlund GL	Differential diagnosis of abusive head trauma
Session III: The courtroom	
Moreno JA	Law 101: Legal foundations of child abuse proceedings
Holmgren B	Preparing an effective expert testimony
Block RW	Responsible medical testimony
Holmgren B, Kleinman PK, Moreno JA, Vezina L-G	Mock trial
Session IV: Imaging sessions	
Nimkin K	Visceral trauma imaging
Kleinman PK	Uncommon but important inflicted skeletal injuries
Walters MM	Dating fractures
Perez-Rossello JM	Skeletal imaging strategies and protocols
Tsai A	Micro CT and finite element modeling of fractures
Grant PE	Neuroimaging protocols
Craychee JA	Ethical issues and practical challenges
Vezina L-G, Schwartz DM	Interactive session: unknown cases

comparison, in 2007 there were 10,400 children younger than 15 years with a new diagnosis of cancer and 1,545 were expected to die from their disease [24].

The result of the seminar was to educate physicians, lawyers and journalists, and through them in part to educate the lay public about the extreme care and diligence taken in making a diagnosis of non-accidental trauma with medical certainty based on medical experience and evidence and not just hypotheses. We all need further education to avoid being swayed by bogus hypotheses and the postulation of non-disease.

Dr. Ingrid Holm [25] superbly presented data detailing that a large amount of calcium and phosphorous are transferred against a concentration gradient from the mother to the fetus, and placental parathyroid related protein (PTHrP) up-regulates active placental calcium transfer. In the neonate, intestinal absorption of calcium is largely passive—not dependent on vitamin D. With maturity, vitamin D becomes more important [26, 27]. There is no scientific evidence to connect vitamin D levels to fractures in the fetus or neonate.

The vitamin D level is being used by some to obscure the difference between vitamin D insufficiency/deficiency and rickets—a bone disease defined by biochemical and radiographic features. The National Institute of Medicine has declared that >20 ng/ml of the 25-OH form of vitamin D is adequate for bone health; in other words, children with greater than this level do not suffer fractures due to vitamin D deficiency [28]. There is no scientific evidence to establish fractures as being secondary to rickets *without* the concomitant biochemical profile and radiographic or histological bone changes of rickets.

In another course presentation, Hedlund cited McLean et al. [29] and pointed out that there is no scientific evidence that intracranial venous thrombosis *alone* is associated with subdural hematoma. Rather, it should be noted that one of the commonest causes of intracranial venous thrombosis is trauma, and that trauma does cause subdural hemorrhage.

This nonsense of child abuse as non-disease and fabricated controversy has to stop. It is increasingly difficult and

costly for the legal system to properly protect children who are victims of physical abuse. It is time for the academic institutions of those who are creating and propagating half-truths and myths, the scientific and professional societies of those who are child advocates, and the legal community involved with protecting children and preventing further abuse to collectively do something.

Advocates of the health and welfare of children must work together. The Society for Pediatric Radiology (SPR), the American Academy of Pediatrics (AAP), the American Professional Society on Abused Children (APSAC), the Helfer Society and other medical and professional societies must join forces and help the legal community know the real evidence about abuse. This activity may come in the form of teams (1) to give expert testimony and review cases and (2) to provide readily available documentation of the literature and new scientific studies. They may also further provide elucidation of physical abuse in multi-disciplinary workshops and educational seminars. A public-relations campaign to educate the lay population would be beneficial. We must all work together. February's course is a good example of the collaborative effort to "get it right."

Child abuse is real! To obscure facts based on non-accepted hypotheses and pseudoscience is unconscionable. The time for action is now.

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