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EDITORIAL

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The way forward in addressing abusive head trauma in infants – current perspectives from Sweden

In the past decade, Swedish courts have seen a rise in legal challenges to the diagnosis of paediatric abusive head trauma (AHT), previously known as shaken baby syndrome. Alternative theories of the causes of the physical signs and symptoms associated with AHT have been increasingly offered in court settings by experts, some recruited from the UK or the United States, when testifying for the defence. The Swedish Paediatric Society became concerned by the courts' increased reliance on defence testimony of questionable scientific validity and in 2014 it called for the Swedish Agency for Health Technology Assessment to conduct a systematic review on AHT (1). We were confident that a methodologically sound review of the evidence base for AHT would provide the guidance needed by front-line clinicians, child protection workers, legal practitioners and policy makers in Sweden.

A two-year project carried out by the agency has focused on *the role of the triad in medical investigations of suspected traumatic shaking* and Lynøe et al. have now published their report (2) and summarised their literature review in this issue of *Acta Paediatrica* (3). As a national organisation of paediatricians who collectively bear responsibility for the care of the youngest victims of abuse, we welcome the opportunity to respond to the conclusions arrived at by the authors in their review. We would like to highlight some substantial flaws in the review and the choice of research focus. We will limit our discussion to some of the main concerns that arise from our understanding of the report and conclude with proposals on the way forward.

The procedures used for the Lynøe et al. report (2,3) became untethered from the agency's published methodology. In their handbook *Assessment of methods in health care*, the agency describes the procedures and methodologies employed in systematic literature reviews undertaken on its behalf (4), stating that it will convene a panel of experts in the field to 'ensure that the assessments are based on a deep understanding of the subject area.'

Although the project group recruited for this review were experts in their respective fields, it would have been appropriate for the agency to include members with extensive experience in the clinical evaluation of AHT or substantial research in this particular field. We fear that this was a departure from its published procedures and may have had an impact on the review process.

The authors' limitation of the review to the diagnostic validity of the 'triad' for traumatic shaking removes the subject from its clinical context, as their premise that the 'triad' comprises a clinical entity is false. AHT is not a diagnosis that is made, or excluded, based only on the presence of the three 'triad' factors, namely retinal haemorrhage, subdural haematoma and encephalopathy. Although these findings are commonly seen in AHT cases, to suggest that diagnostic processes simply rest on the presence or absence of the 'triad', without regard to the specific features and clinical circumstances of the findings, is, at best, misleading.

The 'triad' is a construct used mainly in legal settings by individuals who offer unsupported alternative hypotheses of causation to explain the findings seen in AHT. The construct of the 'triad' represents a rhetorical fallacy known as a straw man, which gives the impression of refuting an opponent's argument – the 'triad' is pathognomonic for AHT – when, in fact, that argument was never advanced by that opponent. We maintain that the term 'triad' carries no value for clinicians experienced in evaluating suspected AHT.

In cases of suspected AHT, it is often not possible to distinguish injuries caused by shaking, impact or a combination of the two. Therefore, the American Academy of Pediatrics, and other national paediatric societies, have abandoned the term shaken baby syndrome and now endorse the more inclusive term AHT, which indicates the presence of cerebral, spinal and cranial injuries resulting from inflicted forces (5).

The methods presented by Lynøe et al. do not provide a complete picture of the exclusion criteria applied (2,3). For example, all studies that described any injury other than those included in the 'triad' were excluded. It is well known to professionals who evaluate cases of suspected child abuse that children exposed to the violent forces associated with AHT often have other documented injuries, including fractures of ribs or long bones, bruises and injuries to brain tissue, in addition to the possible presence of retinal haemorrhage, subdural haematoma and encephalopathy. As a result, a large number of relevant papers were excluded.

Lynøe et al. appear to call into question the diagnostic procedures employed by multidisciplinary child protection teams with regard to AHT. This position betrays a lack of understanding of, or an unwillingness to accept, the clinical realities of these often complex cases. As clinicians, we are familiar with the multidisciplinary process of medical evaluation and differential diagnosis of many paediatric conditions where the stakes are high for the child patient. The medical investigation of suspected AHT encompasses a multifactorial differential workup based on clinical history, physical examination, radiological and laboratory

investigations that are carried out by a diverse group of specialists and subspecialists in paediatrics, radiology, intensive care, surgery, infectious diseases, laboratory and forensic medicine (6). When a conclusion is reached by the multidisciplinary team that an infant's injuries were likely to have been inflicted, it is a result that has carefully considered all the reasonable explanations and excluded conditions, such as leukaemia, bleeding diathesis or metabolic disease, that in rare cases may mimic some features associated with AHT.

We call on the authors to explain the procedures deployed for the external review of the report and how the critical comments by external experts were incorporated into the published version. One of the authors of this editorial (SL) reviewed a draft on behalf of the agency in May 2016 and pointed out a number of the critical flaws outlined above, but they do not appear to have been addressed (7). He noted the inherent bias in the study inclusion, where studies in support of the diagnosis were to be based on at least 10 cases, while alternative hypotheses required only a single case report, with no quality review. Dr Stray-Pedersen, a Norwegian forensic physician, who also published a critical commentary after reviewing the draft (8), called the authors' restriction of the inclusion criteria to witnessed or confessed AHT cases 'unfathomable'.

In October, 2016, the society called for the agency to submit a draft of the report for international peer review prior to the publication of the report in Swedish (9). We understand that similar requests were submitted by several other professional organisations, including the Society for Pediatric Radiology, the Royal College of Paediatrics, the American Academy of Pediatrics and the Norwegian Pediatric Association. These requests were apparently declined.

As it stands, we fear that the inaccuracies in this paper (3), and the report on which it was based (2), may lead to greater uncertainty and confusion among front-line clinicians, child protection workers and members of the criminal justice system who are charged with the care and protection of infants. We see a palpable risk that this study may be misinterpreted or misused to extend well beyond the limitations of the findings delineated by the authors. The publication by Lynøe et al. may also inadvertently result in the derogation of protection afforded to children under Swedish law and the United Nation's Convention on the Rights of the Child.

Moving forward, we need to ensure that the rights of children are not lost in the debate. Having read the agency's published report (2), the society has consulted with members of the agency's project group and the Swedish National Council on Medical Ethics. Following the publication of the report and the present paper (3), the Swedish Paediatric Society has formulated three key messages.

First, we share the view stated by Lynøe et al. in their report (2) that violent shaking of an infant is dangerous and that AHT can have serious sequelae, with permanent damage to the brain and, or, the eyes. There is a broad consensus on this among clinicians and researchers that is supported by a large body of peer-reviewed scientific research. Second, unfortunately, infants are injured and sometimes killed by abusive head trauma. Third, it is the paediatrician's duty to perform careful, comprehensive and evidence-based medical evaluations as well as to safeguard the life and wellbeing of the child.

We need to remain vigilant. The society has called on the Swedish government to address the need for evidence-based national guidelines on the clinical and forensic management of child physical abuse. The systematic education and training of health professionals on child abuse and neglect is also much needed. AHT is entirely preventable and the Swedish Paediatric Society supports the call by the World Health Organization Regional Office for Europe for broad implementation of evidence-based efforts to reduce the frequency (10). Finally, we call upon the medical community and legal scholars in Sweden to engage in a process to ensure that appropriate and ethically sound expert testimony is presented in civil and criminal cases involving AHT.

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References

1. Otterman G, Ludvigsson JF, Söder O, Svedin CG, Köhler M, Janson S, et al. Skakvåld ger hjärnskador hos tiotals spädbarn varje år (Abusive head trauma causes brain injury in tens of infants every year). *Dagens Nyheter* 2014. [Internet] Available at: www.dn.se/debatt/skakvald-ger-hjarnskador-hos-tiotals-spadbarn-varje-ar/ (accessed on February 22, 2017).
2. Swedish Agency for Health Technology Assessment and Assessment of Social Services. *The role of the triad in medical investigations of suspected traumatic shaking*. Stockholm: SBU, 2016. Report No.: 255/2016.
3. Lynøe N, Elinder G, Hallberg B, Rosén M, Sundgren P, Eriksson A. Insufficient evidence for "shaken baby syndrome" – a systematic review. *Acta Paediatr* 2017. doi:10.1111/apa.13760.
4. Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU). *Assessment of methods in health care: a handbook* [Internet]. Stockholm: Statens beredning för medicinsk och social utvärdering (SBU), 2016. Available at: www.sbu.se/globalassets/eng_metodboken_160808.pdf (accessed on February 18, 2017).
5. Christian CW, Block R, the Committee on Child Abuse and Neglect. Abusive head trauma in infants and children. *Pediatrics* 2009; 123: 1409–11.
6. RCPCH. *Safeguarding children and young people, roles and competences for health care staff* [Internet]. RCPCH, 2014.

Available at: www.rcoa.ac.uk/system/files/PUB-SAFEGUARDING-2014_0.pdf (accessed on February 18, 2017).
7. Lucas S. Kommentar till SBU-rapporten "Skakvåld – en systematisk litteraturöversikt" (Comment on the Swedish Agency for Health Technology Assessment and Assessment of Social Services' report "Traumatic shaking – a systematic literature review") [Internet]. SBU, 2016. Available at: www.sbu.se/contentassets/576d378535304180aa9f9e69737f42fd/yttrande_steven_lucas.pdf (accessed on February 22, 2017).
8. Stray-Pedersen A. YTTRANDE till SBU:s rapport om skakvåld (Opinion in regard to the Swedish Agency for Health Technology Assessment and Assessment of Social Services' report on traumatic shaking) [Internet]. SBU. Available at: www.sbu.se/contentassets/576d378535304180aa9f9e69737f42fd/yttrande_arne_stray_pedersen.pdf (accessed on February 22, 2017).
9. Axelsson S. Letter from the Swedish Agency on Health Technology Assessment in response to request from the Swedish Paediatric Society. On file at the Swedish Paediatric Society. 2016.
10. World Health Organization European Regional Office. European report on preventing child maltreatment. Copenhagen: WHO, 2013.