
Fundamental disagreement on 'shaken babies'

OPINIONS

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Consensus is good, but not at the cost of scientific documentation.

In a Perspectives article in the Journal of the Norwegian Medical Association I questioned the quality of the medical documentation that underpins the assumption that forceful shaking of a baby alone can cause subdural haematoma, extensive retinal haemorrhage and encephalopathy (the so-called 'triad') [\(1\)](#).

My concern is linked to infants who show no external signs of blunt trauma to the head, but nevertheless are diagnosed as 'shaken babies'. I do not deny that parents or others may harm a child by abusive handling, including with head injuries as a result, but I would just like to ask: is there solid, scientifically valid evidence that shaking alone may cause such effects?

At the end of my article I called for scientifically valid documentation showing that the criteria that are currently applied may actually be used as legal evidence of 'guilt beyond any reasonable doubt' in cases involving shaken babies [\(1\)](#). With such a clearly defined request, I had expected to see exactly such scientifically valid documentation. I cannot see that the response from Arne Stray-Pedersen and his 17 co-authors presents such documentation [\(2\)](#). To make this point clear, I will here review the articles that the authors refer to as evidence for their arguments, to see the kind of scientific basis on which they rest.

Stray-Pedersen and colleagues explain that in addition to the triad, clear signs of external head trauma may also occur. It is obvious that such findings would point towards an inflicted trauma, and I will therefore not waste any space on discussion of such injuries here.

Subdural haematoma

Stray-Pedersen and colleagues refer to a review article by Kemp and colleagues (3) as evidence of their assertion that forceful shaking results in a typical distribution of the subdural haematoma. Among other features, they are said to be bilateral and multifocal. It is correct that the said article describes such a distribution, based on a comprehensive literature search. We would hence expect that Kemp and colleagues base this description on studies that show the distribution of subdural haematoma in documented cases of 'shaken babies'. They do not. They only refer to an article by Christian and colleagues, which in turn refers to a proposal from the American Academy of Pediatrics Committee on Child Abuse and Neglect (4). Christian and colleagues describe their own article as a 'policy statement'. In other words, it is not based on scientifically valid documentation.

Fourteen of the 21 articles included in the review by Kemp and colleagues are retrospective, the rest are prospective. None of the articles are based on observed abuse. All of them note that the diagnosis of 'shaken baby' was made by multidisciplinary teams, 'experts' or by the article authors themselves in accordance with algorithms that are not based on solid evidence of forceful shaking. Two of the articles report that some of the alleged wrongdoers have confessed, but not when and under what circumstances this happened. One of these articles (5) states that 24.5 % of the cases were based on confessions, the other (6) identified abuse on the basis of confessions registered in the patient records or decisions made by the child protection services, but no information is provided regarding the number that were based on confessions or how these were obtained. Confessions obtained in judicial examinations or police interrogation a long time after the incident are of doubtful value (7).

It is noteworthy that the distribution of subdural haematoma described above is nearly identical to that found in cases of external hydrocephalus complicated by spontaneous subdural haematoma.

In addition, I note that Stray-Pedersen and colleagues now express themselves more cautiously with regard to 'shaken babies' than expert witnesses have done in court proceedings in which I have been involved. 'The term "shaken baby" suggests that the children have been violently shaken, presumably held around the upper torso with both hands and shaken back and forth multiple times' (2). In my experience, words such as *suggests* and *presumably* are not used in such cases in Norwegian courts – such reservations tend to be absent.

Retinal haemorrhage

When it comes to retinal haemorrhage, Stray-Pedersen and colleagues refer to Binenbaum and Forbes (8) as a basis for describing the characteristics of such haemorrhages caused by forceful shaking. In this article, which nearly amounts to a set of instructions for examining the eyes of an allegedly shaken infant, the authors provide no evidence showing that these descriptions are based on documented cases of

'shaken babies'. Nor in his original articles does Binenbaum publish data from children who unequivocally have been abused: the diagnosis of 'abusive head trauma' or 'shaken baby syndrome' has been determined by the hospital's 'child abuse evaluation team' (9).

Encephalopathy

For this item, Stray-Pedersen and colleagues refer to a recently published consensus report (10). The authors of this report ascertain that 'abusive head trauma' is a medical diagnosis to be made by doctors, social workers and other professionals on the basis of all available facts and evidence. Furthermore, they state that scientifically speaking, this is a non-controversial diagnosis which is widely accepted all over the world. This is presented as a fact, with no proof other than that it is based on medical evidence that is generally accepted in relevant medical circles. The latter may be correct, but beyond these relevant medical circles there are many who may be doubtful about this incontrovertible certainty.

Consensus – among whom?

The consensus report referred to above declares to have received support from national and European associations, mainly in the field of radiology and paediatrics, including the Norwegian Society of Pediatricians. The number of associations lending their support is relatively small (10). Neurosurgeons assess and operate on subdural haematoma in children, but associations for this specialty do not endorse the consensus. Nor do many other national paediatric associations – only the Norwegian, Japanese and Swedish ones.

The consensus report states that 'abusive head trauma' is a well-established diagnosis which is deemed valid by 'major national and international professional medical societies and organizations'. Four publications are given as reference for this statement.

These are partly other consensus reports, partly 'statements'. One of them is based on a questionnaire distributed to 1 378 paediatricians etc., asking them whether they consider this to be a valid diagnosis – which they do. None of these articles is based on scientifically valid documentation, they only reiterate what has been 'conventional wisdom' for decades. The consensus report provides 210 references. As far as I can judge, none of them is based on observation of 'shaken babies'. This is remarkable, since the consensus report tells us that a four-figure number of articles have been published on this topic. It seems incredible that nobody has observed any 'shaken babies' among the many thousands of infants included in these articles.

Several months ago, I submitted a request to the chair of the Norwegian Society of Pediatricians, in which I ventured to ask on what scientific basis the board of the society had chosen to endorse this consensus report. I am still waiting for a reply.

External hydrocephalus

Benign external hydrocephalus is a condition to which I have devoted a lot of work, clinically as well as academically. The reason why I became engaged in the work on 'shaken babies' was my discovery that a number of infants who allegedly had been shaken in fact suffered from external hydrocephalus with a completely typical clinical development and radiology; this applies to all the infants with whom I have been personally involved. Stray-Pedersen and colleagues write that for more than 20 years, external hydrocephalus has been included in the considerations of differential diagnoses that experts in forensic medicine should undertake, and that there are indications that this condition may cause spontaneous subdural leakage of blood products and fluids, adding that it is crucial for the treating physicians and the forensic expert witnesses to decide whether this condition is present when a subdural haematoma is detected in an infant. I completely agree. The problem, however, is that this appears to have no effect on the declarations of the expert witnesses, even in cases where the head circumference has shown excessively rapid growth in the time before the assumed shaking.

Is consensus sufficient in cases of such a serious nature?

In medicine, consensus is what we rely on when we seek to agree on how medical problems should be solved and there is no hard and fast evidence in the form of high-quality research that permits us to draw unequivocal conclusions. In such cases, consensus is better than nothing. The crux of the matter is how certain one needs to be in such cases, where infants are separated from their parents, who will be sentenced to long prison terms as a result of expert declarations. Those who believe in the evidential force of the triad do not seem to underpin their views with solid medical documentation. Instead, they refer to a consensus based on historically accumulated material without the scientific quality required. Who are correct: those who stick to the consensus or those who claim that this consensus is weakly founded? The paradox here is that this question is not settled in medical forums once and for all, but by judges and child protection services with no medical background in each individual case.

This presumes that the medical experts in each case live up to the ideal that Stray-Pedersen and colleagues call for.

In that case, consensus surely cannot be good enough.

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