Has this prepubertal girl been sexually abused?

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CRD summary
The diagnostic utility of non-acute physical examination findings to identify sexual abuse in prepubertal girls was evaluated. The authors concluded vaginal discharge, posterior hymenal transections, deep notches and perforations raise suspicion of sexual abuse but do not independently confirm diagnosis. Weaknesses in data and the possibility of bias and error suggest the reliability of the conclusions is unclear.

Authors' objectives
To evaluate the diagnostic utility of non-acute physical examination findings (genital only) to identify sexual abuse in prepubertal girls.

Searching
MEDLINE (1966 to October 2008) and the Cochrane Library (dates not reported) were searched for English language articles. Search terms were reported. Reference lists were examined for additional articles.

Study selection
Studies of prepubertal girls (or less than 10 years old if not defined as such) that used a well described or reproducible examination technique and include a reference standard to determine whether sexual abuse had occurred were eligible for inclusion. The reference standards that were acceptable included: information about the child's court disposition; perpetrator confession; substantiation by the department of social services; or diagnosis by a community or hospital-based child protection team when physical findings were not used to determine level of suspicion of sexual abuse.

When articles were limited to children without a history of sexual abuse, the study inclusion criteria had to outline the reasons how the authors excluded the possibility of sexual abuse. For inclusion, the studies also had to contain data that permitted calculation of test characteristics by pubertal status and/or age, and provide data sufficient for statistical analysis.

The age range of girls in the included studies was from newborn to eight years old. The reference standard used was the child protection team (clinic interview and administration of a non-validated scale) in studies of girls with a previous history of sexual abuse.

The outcome measures used in the review were likelihood ratios (LRs), sensitivity and specificity for the previously abused populations; specificity was calculated for the population not previously abused.

Two reviewers performed the study selection.

Assessment of study quality
Methodological quality was assessed in terms of independence and blinding of comparison of physical examination finding with reference standard and whether patients were recruited consecutively. A quality score was deduced (level 1 indicated highest quality, level 4 lowest quality).

The authors did not state how the validity assessment was performed.

Data extraction
Data were extracted from the primary studies and entered into 2x2 tables which consisted of the number of true positives, true negatives, false positives and false negatives. Point estimates, with 95% confidence intervals (CIs), were calculated for most of the parameters. Test characteristics of all physical findings that could easily be recognised by a clinician who is not a specialist in child sexual abuse examinations were presented.

The authors did not state how data were extracted for the review, or how many reviewers performed the data extraction.
Methods of synthesis
Data were not pooled due to differences between studies. Two accuracy studies were included and test characteristics of components of physical examination were reported individually for these studies. The remaining studies were in non-abused populations, to establish normal findings, and reported specificity only. For these studies, data were grouped by anatomy and ranges in specificity presented where appropriate. A range was reported where a summary value was required.

Results of the review
Eleven studies were included in the review (n=2,251); two case control studies were used to determine diagnostic accuracy in girls with a history of sexual abuse (n=778); nine other studies (study designs not reported) of girls with no previous history of abuse which were used to establish normal findings (n=1,473). Study quality score was 4 in studies of girls without a history of sexual abuse (nine studies) and 3 in studies of girls with a history of sexual abuse (two studies).

Diagnostic findings in girls with a history of sexual abuse:
The presence of vaginal discharge was a significant indicator of sexual abuse, positive LR 2.7 (95% CI: 1.2, 6.0, n=293, one study); as was a diameter of hymenal opening greater than 6.5mm in the knee-chest position, positive LR 2.0 (95% CI: 1.3, 3.2, n=386, one study). It was reported the outcome of hymenal opening may not be clinically useful due to lack of precision.

In the posterior hymen, hymenal transections, deep notches and perforations were reported to raise concerns of genital trauma from sexual abuse but 95% CIs were wide.

Specificity findings in the non-abused population:
Vaginal discharge was an infrequent finding in girls with no history of sexual abuse (more than 95% specificity in three studies).

Further results were reported in the paper.

Authors' conclusions
Vaginal discharge, in addition to posterior hymenal transections, deep notches and perforations, raise the suspicion for sexual abuse in the prepubertal girl. However, these findings do not independently confirm diagnosis.

CRD commentary
The research question was clear and supported by inclusion criteria for participants, intervention, reference standard and outcome. However, there were no inclusion criteria for study design, which may have increased the possibility of subjective decisions during study selection. Appropriate databases were searched, but the authors did not report any attempts to identify unpublished studies and searched for English language studies only, thus increasing the likelihood of language and publication bias. The use of two reviewers was only reported for study selection, so it is not known whether similar steps were taken to reduce error and bias in validity assessment and data extraction. As the included studies were heterogeneous they were not pooled, which appeared to be appropriate.

The limitations of available data (for example lack of data in previously abused girls for a number of outcomes, which prevented calculation of sensitivity) were taken into consideration by the authors. However, as the majority of studies were in a population without a history of sexual abuse, it might have been more appropriate to use this data to describe physical features seen in this population as it has little use in determining test characteristics to diagnose sexual abuse. Also, a LR of less than 5 is not regarded as a good test for ruling in a condition, and two of the three parameters deemed as 'raising suspicion of sexual abuse' had LRs of less than 5, which indicates a small increase in likelihood.

The authors' cautious conclusions reflect the evidence presented. However, there were a number of aspects of the review process that might have increased the possibility of bias and error, as well as weaknesses in the data, so the reliability of these conclusions is unclear.
Implications of the review for practice and research
Practice: The authors stated that physicians must assess the possibility of maltreatment and perform an objective, unbiased examination. If there is a posterior hymenal finding of transection or a deep notch between 4 and 8 o'clock, or a perforation, a report to child protection services should be considered. At a minimum, examination by a child abuse specialist should occur. Providing reassurance to the child and family that the child is healthy and genital examination is normal is important.

Research: The authors stated that larger studies with a strict reference standard and definitions including abused and non-abused girls are needed. These should include standardised examination techniques of children in the supine position, as well as the knee-chest position when possible, as well as a description of the abuse experienced.

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