A systematic review of the evidence for hip surveillance in children with cerebral palsy

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CRD summary
This review found that hip surveillance based on widely available radiological methods can identify children with cerebral palsy who are most at risk of subluxation. Limitations in the review, especially the lack of detail about the included studies, make it difficult to comment on the reliability of these findings.

Authors' objectives
To determine the effectiveness of hip surveillance in children with cerebral palsy.

Searching
MEDLINE, EMBASE and CINAHL were searched from inception to April 2005. The Cochrane Controlled Trials Register, Cochrane Database of Systematic Reviews and DARE were also searched. Key journals were handsearched from 1998 to 2005, reference lists of retrieved studies were screened, and publications from known researchers in the field were identified. Full details of the searches were provided. The review was limited to studies published in the English language.

Study selection
Study designs of evaluations included in the review
Inclusion criteria were not defined in terms of the study design. Both prospective and retrospective studies were included; two studies used historical controls. Details of the exact study designs employed by the included studies were not reported.

Specific interventions included in the review
Inclusion criteria were not defined in terms of the interventions, but it appears that studies of hip surveillance were eligible for inclusion. The surveillance methods used in the included studies appear to have been radiological measurements to monitor hip displacement and clinical assessment of locomotor ability.

Reference standard test against which the new test was compared
The review did not include any diagnostic accuracy studies that compared the performance of the index test with a reference standard of diagnosis.

Participants included in the review
Studies of children aged 0 to 18 years with cerebral palsy were included, whereas studies of children with congenital abnormalities of the spine or pelvis or a history of previous orthopaedic surgery were excluded. Studies in which the data could not be extracted separately for adults and children were also excluded.

Outcomes assessed in the review
Studies that provided data on the frequency of dislocation or subluxation, risk factors or surveillance measures were eligible for inclusion.

How were decisions on the relevance of primary studies made?
Full papers appear to have been selected on the basis of the quality and relevance rating, as performed by two independent reviewers.

Assessment of study quality
Studies were assessed according to the following criteria: appropriate study design; sampling frame; adequate sample size; appropriate duration of follow-up; objective, blinded and defined outcome assessment; prognostic variables appropriately defined and measured; description of withdrawals and availability of data in sufficient patients; analysis; treatment described, standardised and subsequent to cohort inclusion; random allocation or description of baseline differences between the groups. The studies were graded as low relevance if they fulfilled 1 to 3 items, as medium
relevance if they fulfilled 4 to 6 items, and as high relevance if they fulfilled at least 7 items. It appears that papers were excluded on the basis of this rating but no details were provided.

Two reviewers independently assessed study quality; any disagreements were not resolved.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
The results of each included study were described. There was no attempt to synthesise results across studies.

How were differences between studies investigated?
Differences between the studies were not formally investigated.

Results of the review
Six studies were included in the review (number of participants unclear).

One reviewer judged two studies to be of high quality, three to be of medium quality and one to be of low quality. The other reviewer judged four studies to be of high quality and two to be of medium quality.

Four studies provided data on the natural history, incidence and risk factors for dislocation of the hip; the other two studies reported surveillance results. Surveillance programmes allowed earlier identification of subluxation and reduced surgery requirements for dislocated hips. The risk of developing subluxation of the hip in children who were not walking by the time they were five was approximately 60%; the risk was greatest among those with severe neurological involvement.

Authors' conclusions
Surveillance based on widely available radiological methods can identify children most at risk of subluxation.

CRD commentary
The review addressed a broad question that was supported by inclusion criteria defined in terms of the population and outcomes; the criteria applied for intervention and study design were not clear. An extensive literature search was conducted but the review was restricted to studies published in English, thus the review may be subject to language and publication bias. A formal quality assessment was carried out but the results of this were only presented as a summary grading, which varied between reviewers, and so it was not possible to determine which individual quality criteria were fulfilled. There were very few details about the included studies, especially in relation to study design, therefore the validity and generalisability of the findings is unclear. The decision not to combine the studies using meta-analysis was appropriate given the differences between the studies, but some attempts to synthesise results across studies rather than summarising the findings of each included study would have greatly helped with the interpretation of the results. Given the limitations of this review, especially the lack of detail on the included studies, it is not possible to comment on the reliability of the authors' conclusions.

Implications of the review for practice and research
Practice: The authors stated that all children with bilateral cerebral palsy should have a radiography of the hip at the age of 30 months; children with a migration percentage greater than 33% or an acetabular index over 30 degrees are likely to require treatment.

Research: The authors did not state any implications for research.
Funding
Not stated.

Bibliographic details

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Cerebral Palsy /complications /physiopathology; Child; Child, Preschool; Hip Dislocation /complications /diagnosis /surgery; Infant; Quadriplegia /complications; Research Design; Risk Factors; Walking /physiology

AccessionNumber
12006009346

Date bibliographic record published
03/09/2007

Date abstract record published
01/09/2008

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.