Is acupuncture safe: a systematic review of case reports
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CRD summary
This review assessed the risks associated with acupuncture. The authors' concluded that acupuncture appears to be a safe procedure with minimal adverse reactions. The strength of this conclusion is limited because it is based solely on English language, published case reports which are unlikely to provide a reliable estimate of the occurrence of adverse outcomes.

Authors' objectives
To assess the risks associated with acupuncture.

Searching
MEDLINE, CISCOM, EMBASE (Excerpta Medica), Cardiff School of Biosciences (BIOSI), CINAHL, International Pharmaceutical Abstracts, Science Citation Index Expanded, the Cochrane Complementary Medicine Field Trials Registry, and the University of Maryland's CAMPAIGN database were searched; the search terms were listed in the review. In addition, information was obtained from the Safety Record of Acupuncture of the National Commission for the Certification of Acupuncturists. Studies published in English between 1965 and 1999 were included.

Study selection
Study designs of evaluations included in the review
Case reports were eligible for inclusion. To avoid duplication, reviews, comments and case-control studies were excluded. Clinical trials were also excluded from the review.

Specific interventions included in the review
Studies examining any form of acupuncture appear to have been eligible for inclusion. Within the included studies, acupuncture was administered by physicians, chiropractors, osteopaths, natural healers, licensed acupuncturists or non-qualified acupuncturists, or was self-administered. The techniques included needling, electroacupuncture, okibari and maxibustia.

Participants included in the review
No inclusion criteria relating to the participants were specified. The included participants suffered a wide range of complaints and diseases, some of which were reported in the review.

Outcomes assessed in the review
Studies reporting complications or adverse effects of acupuncture were eligible for inclusion. Complications were defined as 'an added difficulty; a complex state, a disease or accident superimposed upon another without being specifically related'. Adverse effects and reactions were defined as 'development of an undesired side effect or toxicity'. The outcomes reported in the primary studies included infections (e.g. hepatitis), internal organ or tissue injuries (e.g. pneumothorax) and adverse reactions (e.g. contact dermatitis).

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Numbers of patients with complications or adverse events were extracted, together with long-term patient outcomes where available.

**Methods of synthesis**

How were the studies combined?
A narrative synthesis of the studies was undertaken, organised by type of complication or adverse effect/reaction.

How were differences between studies investigated?
Differences in acupuncture techniques were highlighted within each section of the narrative synthesis. The tables presented allowed the comparison of studies, within each type of outcome, according to various characteristics such as practitioner, disease treated or timing of onset.

**Results of the review**

Two hundred and two cases, identified from 98 papers, were included.

**Infections.**

Between 1974 and 1988, hepatitis was the most common complication. In all 94 cases, unsterile techniques were employed. No cases were identified post 1988. Nine cases of auricular infection were reported between 1975 and 1987. No information on sterilisation was available; however, needles were left in the pinna for weeks. Fifteen additional cases of infection that were possibly related to acupuncture were also identified. The diagnoses were human immunodeficiency virus infection, staphylococcal septicemia (2), spinal infection with prolapsed disc, chronic osteomyelitis, bacterial endocarditis, pseudoaneurysm, posterior tuberculous spondylitis, bacterial meningitis and epidural haematoma, glenohumeral pyarthrosis, cervical spinal epidural abscess, and peritemporomandibular abscess.

**Internal organ or tissue injuries.**

Twenty-six cases of pneumothorax were associated with acupuncture. Thirteen cases of spinal cord and nerve injury were identified, the majority of which were linked with a Japanese needling technique that involved the permanent insertion of needles into paraspinal subcutaneous tissues. Twenty-one further cases of injury were reported. In some the Japanese method of embedding needles was used, while four were the result of self-puncturing.

**Other complications.**

Eleven other complications were detailed in the case reports, of which two were third-degree burns and two were asthmatic attacks.

**Adverse reactions.**

Between 1972 and 1991, 7 cases of contact dermatitis were found. Upon testing, 6 of these cases were found to be allergic to certain metals used in acupuncture needles. In addition, 6 individuals treated with acupuncture reported petechiae, cutaneous herpes, interference with a cardiac pacemaker, hypotension, fainting or recurrent fainting, vomiting and sweating.

Overall, of the 144 cases for which follow-up information was available, there were 7 deaths and 25 suffered permanent consequences. The frequency of reported complications and adverse effects appears to be declining over time.

**Authors' conclusions**

The authors concluded that if clean needle procedures and proper needling techniques are followed, acupuncture appears to be a safe medical procedure with minimal adverse reactions.
CRD commentary
The research question of the review was clearly reported, as were the inclusion criteria relating to the outcomes and study design. No attempt to locate unpublished reports was mentioned in the search strategy; hence, publication bias may have influenced the results. In addition, the included studies were limited to those published in English; language bias is likely given the subject matter of the review. Details of the included studies were presented, although with some inconsistency that was possibly related to the availability of information in the original case reports. The narrative synthesis was appropriate and clearly organised. The steps taken to minimise bias in the review process were not reported. Two key limitations need consideration when interpreting the authors' conclusions. A review based solely on English language, published case reports is unlikely to provide a reliable estimate of the occurrence of adverse outcomes associated with such a diverse intervention. As to the cases that were included, there was insufficient evidence of a thorough investigation of causality.

Implications of the review for practice and research
Practice: The authors stated that the risks can be minimised through the use of disposable needles and clean needle techniques by licensed acupuncturists. They further stated that patients should inform practitioners of any bleeding problems, anatomical variations, or use of anticoagulant medication or pacemakers. The authors also recommended that a mechanism be established by practitioners for the daily documentation of adverse events and complications; a list of criteria was given.

Research: Where further research into acupuncture is carried out, the authors suggested that any adverse events and complications be documented.

Funding
Maurice Laing Foundation and Thera Trust.

Bibliographic details

PubMedID
12564354

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Acupuncture Therapy /adverse effects /standards /trends; Hepatitis /etiology; Humans; Hypotension /etiology; Nausea /etiology; Needlestick Injuries /prevention & control; Pain /etiology; Patient Satisfaction; Risk Factors; Skin Diseases /etiology; Syncope /etiology; Vomiting /etiology

AccessionNumber
12003000346

Date bibliographic record published
31/05/2004

Date abstract record published
31/05/2004
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.