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Anti-bacterial injection after aspiration of pus in a non-prosthetic joint - a scoping review

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Kamilla Jægerum Sørensen¹, Frederik Stuhr Bang², Anna Trier Brix³, Laureen Marsault³, Anders Overgaard³, Alexander Steenberg Dastrup⁴, cdreyer⁴

¹Department of Orthopaedic Surgery and Traumatology, CORI - Centre for Orthopaedic Research and Innovation, Naestved-Slagelse-Ringsted Hospital, Denmark;

²MD, Lægeklinikken i Strømøade, Strømøade 16c. 1., 9800 Hjørring, Denmark;

³Department of Orthopaedic Surgery and Traumatology, Odense University Hospital, Institute of Clinical Research, University of Southern Denmark, Denmark;

⁴MD, PhD, Region of Southern Denmark, Damhaven 12, 7100 Vejle, Denmark, ORCID: 0000-0002-8932-038X



kamillajn

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We use this protocol and it's working

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Abstract

Objective:

The objective of this scoping review is to report the current extent and use of local antibacterial intraarticular agents in treating native joint infections.

Introduction:

Septic arthritis (SA) is a severe joint infection that can lead to rapid joint destruction and systemic illness, if not addressed in the acute phase. Native joint septic arthritis (NJSA) is associated with significant morbidity, particularly in elderly patients and in those with comorbidities. Increasing incidence rates, affected by aging populations and arthroscopic interventions, underscore the need for optimized treatment strategies. This scoping review explores the use of antibacterial agents as a primary intraarticular treatment for infected native joints, potentially reporting literature, that in later stages can offer an alternative to immediate surgical intervention.

Inclusion criteria:

All in vivo studies, both human and animal, with intraarticular treatment of native joints with an antibacterial agent were included. Studies with prosthetic joints or studies in other languages than English or Scandinavian will be excluded.

Methods:

A comprehensive literature search was conducted in PubMed, MEDLINE, Clinical Trials and Web of Science, limited to studies published in English or Scandinavian. Eligible studies includes both animal and human research evaluating the use of antibacterial agents for native joint septic arthritis. Titles and abstracts will be screened independently by two reviewers, followed by full-text review for inclusion. Data will be extracted and synthesized descriptively, focusing on type of antibacterial agent used, treatment outcomes, and study design.

Results:

All included studies will be presented in an overview table and addressed separately in the result section. The table will include: Citation and year, population (country and number of participants n=), joint, diagnostic criteria, injected or arthroscopically treated, type of antibacterial agent and reason for choice, timeframe for intraarticular treatment, control group, results, additional surgery (yes/no), bacterial agent, side effects, prior antibiotic treatment, admission time, mortality, failure rate and criteria. All included studies will be compared and gathered in groups in the result section. Results from clinical and experimental studies will be divided.

Conclusions:

The authors will comment on the tendencies of the study, and the knowledge that has been gathered in conducting this review.



Guidelines

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews and follow the PRISMA-ScR guidelines.

Review question

- 1 Which types of intraarticular antibacterial substances has been reported to treat verified septic arthritis in a native joint in the acute setting in both human and animals?
- 2 Secondary: Has the study been able to conclude any treatment effect, measured in re-arthroscopies?
- 3 Tertiary: Has any of these reported any side effects?

Eligibility criteria

- 4 The included studies will be all in vivo studies in both humans and animals with native joints. All states of native joints will be included, also arthritis or rheumatoid arthritis.
- 5 All ex-vivo studies and prosthetic joints will be excluded.
- 6 All antibacterial intraarticular injection or primary arthroscopic lavage in the treatment of infection.
- 7 All anti-inflammatory substances for pain or regenerative treatment will be excluded.
- 8 In the acute setting when septic arthritis is confirmed by arthrocentesis with pus.
- 9 Both treatment with injectables and arthroscopic lavage will be included. Repeated arthroscopic treatment will be considered a failure treatment.
- 10 All inclusion and exclusion criteria will be added to the mind-map, and all full screen text that is excluded from the study, will present with one of the exclusion criteria below.

Types of Sources

- 11 This scoping review will consider all types of peer-reviewed articles. This includes both experimental and quasi-experimental study designs including randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-

series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports and descriptive cross-sectional studies for inclusion.

Text and opinion papers will not be considered for inclusion in this scoping review.

Methods

- 12 The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews and follow the PRISMA-ScR guidelines.

Search strategy

- 13 The search strategy will aim to locate both published and unpublished studies. An initial limited search of MEDLINE, PubMed, and Clinical Trials was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy conducted with University Librarian in a block search for (("septic arthritis" OR "infectious arthritis" OR joint) AND (lavage OR irrigation OR washout OR wash-out OR "wash out" OR arthroscopic OR arthroscopies OR arthroscopy OR "joint aspiration" OR arthrocentesis OR "needle aspiration") AND (antibacterial OR antibiotics)). No filter for publication date, and studies with all text availabilities will be included. Studies published in English or Scandinavian languages will be included. The databases to be searched include PubMed, MEDLINE, Clinical Trial and Web of Science. Sources of non peer-reviewed unpublished studies/gray literature will not be included.

Study/Source of Evidence selection

- 14 Following the search, all identified studies will be put into Covidence for the screening process. Included articles after all 3 screening stages will be collated and uploaded into Mendeley Cite. In stage 1 titles and abstracts will be screened by two independent reviewers for assessment against the inclusion criteria for the review. If any disagreements, a third author will be included for assessment. The possible relevant articles after stage 1, full text will be assessed in detail against the inclusion criteria by two reviewers. Again, any disagreements will be solved by a third author. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. The results of the search and the study inclusion process, will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram.

Data Extraction

- 15 Data will be extracted from papers included in the scoping review by two or more independent reviewers using a data extraction tool d. The data extracted will be included in a table including: Citation and year, population (country and number of participants n=), joint, diagnostic criteria, injected or arthroscopically treated, type of antibacterial agent and reason for choice, timeframe for intraarticular treatment, control group, results, additional surgery (yes/no), bacterial agent, side effects, prior antibiotic treatment, admission time, mortality, failure rate and criteria.
- The data extraction will be gathered in the results section, comparing the included studies based on the result from each section, and based on the previous headlines. Gathered results will then be commented in the discussion section. Conclusion will be based on the principle by scoping reviews, commenting the reported studies, without the possibility of quality checks, but with the focus of the reported content in mentioned context.
- The draft data will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will be resolved through discussion, or with an additional reviewer/s. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

Data Analysis and Presentation

- 16 The primary report of the data will be presented in a table. The screening procedure will be presented in a mind-map as following the PRISMA-ScR guidelines. A narrative summary will accompany the tabulated results and will describe how the results relate to the reviews objective and questions.

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