Accuracy of diagnostic tests for prosthetic joint infection: a systematic review

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There are few evidence-based recommendations on the most effective methods for diagnosing prosthetic joint infections (PJIs), and the potency of tests in relation to each other also remains vague. This systematic review aimed to (1) identify systematic reviews reporting accuracies of available approaches for diagnosing PJI, (2) critically appraise their quality and bias, and (3) compare the available approaches in terms of accuracy for diagnosing PJI.; PubMed and EMBASE databases were searched for meta-analyses reporting accuracies of different diagnostic modalities for PJIs. Thirteen systematic reviews met the inclusion and exclusion criteria, and their data were extracted and tabulated by two reviewers in duplicate and independent manners.; The 13 articles reported diagnostic accuracy from 278 clinical studies comprising 27,754 patients and evaluating 13 diagnostic tests grouped into 7 broad categories. Implant sonication had the highest positive likelihood ratio (17.2), followed by bacteriology (15.3) and synovial fluid differentiated cytology (13.3). The highest negative likelihood ratio was for interleukin (IL)-6 serum marker (0.03) followed by synovial fluid cytology and differentiation (0.12 and 0.13, respectively).; The diagnostic tests that are most likely to rule out PJI include serum IL-6, serum C-reactive protein, and synovial fluid cytology. On the other hand, the diagnostic test that is most likely to confirm PJI is implant sonication. Nuclear imaging showed low overall accuracy as diagnostic tests for PJI. The findings of this study could enable clinicians to confirm or rule out PJIs using the most accurate, rapid, least invasive, and cost-effective tools available, thereby enabling fast treatment before formation of resistant biofilms and degradation of patient conditions.; Systematic review, Level IV.
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