ABSTRACT

Evaluation of osteoarthritic features in peripheral joints by ultrasound imaging: A systematic review

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The role of ultrasound imaging for osteoarthritis (OA) diagnosis in peripheral joints has not been clearly defined. To further understand this role, the objectives of this study were to determine how structural and inflammatory OA features in peripheral joints are assessed, defined and graded by ultrasound imaging. MEDLINE, CINAHL, Cochrane and SPORTDiscus databases were systematically searched in March 2021. To be eligible, studies needed to (1) include participants with peripheral joint OA, and (2) use grey scale and/or power Doppler ultrasound imaging to assess one or more ultrasound features in peripheral joints of the hands and feet. Methodological quality of all included studies was assessed using the Critical Appraisal Skills Program tool [1]. A total of 159 citations were identified for screening. Thirty-two articles were included for final analysis and were of good methodological quality. Thirty articles evaluated ultrasound features of hand OA and two assessed ultrasound OA features in the foot. There were inconsistencies between studies in terms of what ultrasound features were assessed, how these features were defined and what grading system was applied to determine degree of osteoarthritic change. The review found inconsistencies in the definition of synovial pathology. Consequently, it is unclear whether synovial pathology is best represented as separate entities or combined as a single domain, termed “synovitis”. How OA ultrasound features were defined and graded has largely been extrapolated from recommendations originally constructed for populations with rheumatoid arthritis. Given the prognostic value of synovitis for OA progression and that inflammation associated with OA is fundamentally different from that in rheumatoid arthritis [2, 3], the validity of applying definitions, grading systems and atlases originally developed for rheumatoid arthritis needs consideration. This review strengthens the case for further refinement and validation of OA definitions, grading systems and ultrasound atlases specific to peripheral joints.

References

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