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Time to redefine erosive osteoarthritis

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Osteoarthritis (OA), a disease that mainly targets cartilage, also affects ligaments, the subchondral bone and synovium, and, according to recent definitions, it is a disease of the joint as an organ.¹ Its most characteristic radiographic features are joint space narrowing, bone sclerosis and osteophytes;² bone erosions, and in particular subchondral bone erosions, have also been found in some patients.³ Bone erosions that classically affect the interphalangeal (IP) joints identify a disease subset called erosive osteoarthritis (OA).⁴ The particular localisation of erosive OA is considered so characteristic of the disease that the term has been used, since it was first described by Peter *et al.*,⁵ almost interchangeably with erosive hand OA. A growing body of evidence, however, suggests that it is time to re-evaluate the definition, since the term erosive OA can be appropriately applied to other OA localisations including at the thumb base (TB)⁶ and facet joints.⁷ These different disease subsets share not only the same classic radiographic features, such as subchondral bone erosions, but also the severity of the disease's clinical expression.

Unlike the classical clinical features noted in the large majority of patients with hand OA, erosive OA is characterised by an abrupt onset, swelling and erythema, as well as functional and at times symmetric limitation of several joints.⁸

As these aspects seem quite similar to those found in inflammatory joint diseases, the term inflammatory OA, which has been proposed by some authors, does indeed seem justified.⁹ New sensitive imaging techniques have demonstrated that the same radiological and clinical manifestations can also be found in TB and facet joint OA.^{6,7}

According to a population-based observational study carried out in North Staffordshire, focusing on two cohorts and examining 1076 participants with hand symptoms ≥ 1 day during the previous month,¹⁰ it did not seem appropriate to include the TB joints (first carpometacarpal (CMC) and scaphoid-trapezoid (ST) joints) within the clinical spectrum of erosive hand OA. The prevalence of the erosive form in CMC joints

was 2.2%, but only 0.5% of the patients had erosive disease simultaneously affecting the IP joints and first CMC joints. Only a small number of patients thus had erosive OA both at the IP joints and first CMC joints, while the rest of the participants had erosive OA exclusively at the IP joints or first CMC joints. According to that study's data, men are more frequently affected by erosive TB OA than women,¹⁰ which was an unexpected finding since erosive IP joint OA mostly affects females. In view of the findings outlined here, it would seem reasonable to consider erosive TB OA as a separate entity from erosive IP OA. In view of Kwok *et al.*'s¹⁰ data and the different gender prevalences that have been found, it also seems appropriate to consider erosive IP joint OA and erosive TB OA as two different subsets of erosive OA of the hand.

But it is also important to remember that the term erosive can also be applied to sites other than the hand. Two recent studies published, respectively, by Gellhorn *et al.*¹¹ and Suri *et al.*,¹² focused, in fact, on severe facet joint OA.

Facet joint OA is a frequent cause of back and neck pain. The radiological features of apophyseal joint OA include narrowing of the facet joint space, subarticular bone erosions, subchondral cysts, osteophyte formation and hypertrophy of the articular process. Facet joint OA is not distributed equally throughout the spine: the lower part of the lumbar region (L4–L5 and L5–S1) and the mid-cervical region (C3–C5) are more frequently affected.¹³

The clinical syndrome of painful facet joints usually includes localised neck or back pain with some degree of radiation into the upper or lower limbs. Facet joint OA has been associated with degenerative disease. Structural changes of the facet joints can be caused by increased loading, which leads to degeneration of the disc or disc-space narrowing.¹⁴ Up to 70% of the axial load can be borne by the facet joints in the event of severe disc-space narrowing.¹⁵ OA of the facet joints should always be taken into consideration when a differential diagnosis of low back and cervical pain is being made, especially in

older adults. If, moreover, erosions are found when the facet joints undergo imaging procedures, rheumatoid arthritis, spondyloarthritis and gout, as well as erosive facet joint OA, should all be taken into consideration.

To conclude, erosions, which tend to be more frequent than expected in OA and which certainly warrant further analysis, are often associated with severe clinical presentation and evolution. It is probably time to redefine erosive OA, which should be distinguished into three main subtypes: erosive hand OA of IP joints, erosive hand OA of TB joints and erosive OA of the facet joints.

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REFERENCES

- Loeser RF, Goldring SR, Scanzello CR, *et al.* Osteoarthritis: a disease of the joint as an organ. *Arthritis Rheum* 2012;64:1697–707.
- Zhang W, Doherty M, Leeb BF, *et al.* EULAR evidence-based recommendations for the diagnosis of hand osteoarthritis: report of a task force of ESCISIT. *Ann Rheum Dis* 2009;68:8–17.
- Altman RD, Gold GE. Atlas of individual radiographic features in osteoarthritis, revised. *Osteoarthritis Cartilage* 2007;15(Suppl A): A1–56.
- Punzi L, Ramonda R, Sfriso P. Erosive osteoarthritis. *Best Pract Res Clin Rheumatol* 2004;18:739–58.
- Peter JB, Pearson CM, Marmor L. Erosive osteoarthritis of the hands. *Arthritis Rheum* 1966;9:365–88.
- Saltzherr MS, van Neck JW, Muradin GS, *et al.* Computed tomography for the detection of thumb base osteoarthritis: comparison with digital radiography. *Skeletal Radiol* 2013;42:715–21.
- Weishaupt D, Zanetti M, Boos N, *et al.* MR imaging and CT in osteoarthritis of the lumbar facet joints. *Skeletal Radiol* 1999;28:215–19.
- Ramonda R, Frallonardo P, Musacchio E, *et al.* Joint and bone assessment in hand osteoarthritis. *Clin Rheumatol* 2014;33: 11–19.
- Punzi L, Frigato M, Frallonardo P, *et al.* Inflammatory osteoarthritis of the hand. *Best Pract Res Clin Rheumatol* 2010;24:301–12.
- Kwok WY, Kloppenburg M, Marshall M, *et al.* The prevalence of erosive osteoarthritis in carpometacarpal joints and its clinical burden in symptomatic community-dwelling adults. *Osteoarthritis Cartilage* 2014;22:756–63.
- Gellhorn AC, Katz JN, Suri P. Osteoarthritis of the spine: the facet joints. *Nat Rev Rheumatol* 2013;9:216–24.
- Suri P, Hunter DJ, Rainville J, *et al.* Presence and extent of severe facet joint osteoarthritis are associated with back pain in older adults. *Osteoarthritis Cartilage* 2013;21:1199–206.
- Kalichman L, Li L, Kim DH, *et al.* Facet joint osteoarthritis and low back pain in the community-based population. *Spine (Phila Pa 1976)* 2008;33:2560–5.
- Goode AP, Carey TS, Jordan JM. Low back pain and lumbar spine osteoarthritis: how are they related? *Curr Rheumatol Rep* 2013;15:305.
- Adams MA, Hutton WC. The mechanical function of the lumbar apophyseal joints. *Spine (Phila Pa 1976)* 1983;8: 327–30.