Osteophytes in osteoarthritis. Clinical aspects

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OSTEOPHYTES, both central and marginal, are an integral pathologic feature of osteoarthritis OA. They are the single radiographic feature on which the diagnosis of OA may be established, according to criteria of the American College of Rheumatology [1] and the radiographic abnormality most strongly associated with knee pain [2], whereas joint space narrowing is the most sensitive marker of OA progression. The Kellgren & Lawrence grading system for radiographic severity of OA, which is weighted heavily toward osteophytosis, correlates poorly, however—as does joint space narrowing in the conventional standing extended view radiograph of the knee—with the severity of articular cartilage damage as seen arthroscopically [3].

Although formation of new subchondral bone is coupled to resorption of existing bone at that site, osteophyte formation at the margins of the OA joint occurs by the process of enchondral ossification. Therefore, antiresorptive drugs, which effectively inhibit formation of cancellous subchondral bone, have no effect on formation of marginal osteophytes. Furthermore, in animal models, disease-modifying drugs for OA (DMOADs), such as doxycycline, which can prevent the development of articular cartilage damage, may have no effect on osteophyte formation [4]. On the other hand, glucocorticoid administration, which has an anti-anabolic effect on connective tissue, may inhibit both cartilage breakdown and osteophytosis [5].

It has been suggested that when osteophytes appear in the absence of other bony changes, e.g., subchondral cysts or subchondral sclerosis, they may be a manifestation of aging, rather than of osteoarthritis, insofar as they often do not predict radiographic progression of joint damage over the ensuing years [6]. In most cases, osteophytes are asymptomatic. However, they may be of clinical importance. In the interphalangeal joints of the hand, osteophytes may be intermittently symptomatic, although they usually do not result in marked functional impairment and represent chiefly a cosmetic nuisance. Osteophytes may cause joint pain either by stretching nerve endings in the periosteum or as a result of microfracture of the fragile bony trabeculae within the spur. In the apophyseal joints of the spine they may compress nerves, causing motor and/or sensory impairment. In addition, they may compromise cervical blood flow, in which case they may cause, e.g., dizziness or loss of vision. Anterior osteophytes in the cervical spine, which are due to spondylosis and not to osteoarthritis, may produce esophageal impingement and dysphagia.

On the other hand, it has been suggested that marginal osteophytes play a protective role in stabilizing the OA joint, by putting tension on collateral ligaments. Intra-operative removal of osteophytes from osteoarthritic knees has been shown to increase varus and valgus instability [7]. For this reason, some investigators have cautioned that removal of osteophytes will accelerate articular cartilage degeneration in the osteoarthritic knee. Solid evidence that this is the case, however, is lacking. Indeed, cheilectomy (the surgical removal of osteophytes) can improve mobility at the first metatarsophalangeal joint of patients with hallux rigidus without increasing either symptoms or joint breakdown [8].

References
3. Brandt KD, Fife FS, Braunstein EM, Katz B. Radiographic grading of the severity of knee osteoarthritis: Relation of the Kellgren and Lawrence grade to a grade based on joint space narrowing.


