Medical management of osteoid osteoma

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Objective: To see if the results of managing osteoid osteoma with medical treatment alone is comparable to those after surgery or other ablative therapy. **Design:** A case series. **Setting:** A tertiary care centre. **Patients:** Eleven patients with osteoid osteoma treated over a 5-year period. The condition was diagnosed from a typical history, patient age, standard radiography, computed tomography, bone scanning, complete blood count and measurement of the erythrocyte sedimentation rate. **Interventions:** Continued medical treatment with nonsteroidal anti-inflammatory drugs (NSAIDs) for 6 months after pain ceased. Surgery was done only in those who refused or could not tolerate medical treatment. **Main results:** Medical treatment successfully controlled the pain in all patients. Two patients decided to undergo surgery because of intolerance to the NSAIDS. In 7 patients the symptoms resolved after a mean time of 2.5 years. Two patients were still taking NSAIDS 5 years from the time of diagnosis. **Conclusions:** The natural history of osteoid osteoma is self-limited so patients should be offered nonoperative treatment, reserving ablative treatment for those who are unable or unwilling to take NSAIDs until their symptoms resolve.

Objectif : Déterminer si les résultats de la prise en charge d'un ostéome ostéoïde par traitement médical seulement sont comparables à ceux d'une intervention chirurgicale ou d'une autre thérapie par ablation. **Conception :** Série de cas. **Contexte :** Centre de soins tertiaires. **Patients :** Onze patients atteints d'un ostéome ostéoïde traités sur cinq ans. On a diagnostiqué le problème en se fondant sur des antécédents typiques, l'âge du patient, une radiographie standard, une tomodensitométrie, une scintigraphie osseuse, une formule sanguine complète et le taux de sédimentation érythrocytaire. **Interventions :** Traitement médical continu au moyen d'anti-inflammatoires non stéroïdiens (AINS) pendant six mois après la disparition de la douleur. On a procédé à une intervention chirurgicale uniquement chez les sujets qui ont refusé le traitement médical ou ne pouvaient le tolérer. **Principaux résultats :** Le traitement médical a réussi à contrôler la douleur chez tous les patients. Deux patients ont décidé de subir une intervention chirurgicale parce qu'ils ne toléraient pas les AINS. Chez sept patients, les symptômes se sont résorbés après 2,5 ans en moyenne. Deux patients prenaient encore des AINS cinq ans après le diagnostic. **Conclusions :** L'évolution naturelle de l'ostéome ostéoïde est autolimitée et c'est pourquoi il faudrait offrir aux patients un traitement non opératoire, et réserver l'ablation à ceux qui sont incapables de prendre des AINS jusqu'à la disparition de leurs symptômes, ou qui ne veulent pas en prendre.

Osteoid osteoma is a well-known benign bone lesion, occurring mainly in the extremities and the posterior elements of the spine. It usually presents with pain, often at night, relieved with the use of acetylsalicylic acid or nonsteroidal anti-inflammatory drugs (NSAIDs).

Surgical removal of the lesion, either by curettage or excision "en bloc," is almost always successful in resolving the pain.[1] Laser ablation and percutaneous thermal ablationwith computed tomography help have also been shown to be effective.[2,3] Occasionally, however, there are problems with surgery. The surgeon may fail to find the lesion, and pathologic fracture has been reported, especially after "en bloc" resection.[4]

Little effort has been made to use medical treatment because surgery is so successful. There have been a few isolated case reports on the medical treatment of osteoid osteoma, but only 1 series of long-term experience, that by Kneisl and Simon.[5] We were impressed with their approach and decided to try medical therapy alone for our patients. We report here the successful outcome of 9 patients treated for osteoid osteoma with NSAIDs only,

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thereby lending support to their conclusions.

Patients and methods

Between 1995 and 1999, 11 patients (6 male, 5 female) with osteoid osteoma were seen in one author's clinic (D.A.Y.). The mean age of these patients was 14 years (range from 6–21 yr). The diagnosis was based on the clinical history, plain radiography, and computed tomography and bone scan criteria suggested by Kneisl and Simon,[5] and others.[1] A complete blood count was done, and the erythrocyte sedimentation rate and C-reactive protein were measured in all patients to rule out bone infection.

The lesion was in the tibial diaphysis in 6 cases, the femoral neck in 2, the midshaft of the femur in 2, the midshaft of the ulna in 1 case and the lamina of the lumbar spine in 1.

All patients agreed to try nonoperative treatment, initially during the time needed to obtain the full workup as an outpatient and later for a longer period, when it was evident that most or all of the pain was relieved. The NSAIDs used were diclofenac and ibuprofen, usually the sustained-release version.

All patients had regular follow up with periodic radiography, at least until 2 years after the pain had ceased.

Results

All patients had a typical nidus seen on plain radiographs or CT, plus a "hot" bone-scan. They all had an erythrocyte sedimentation rate within the normal range and otherwise normal blood chemistry findings.

All patients had complete control of the pain with NSAIDs, but the pain resumed if the medication was stopped.

Seven patients eventually had complete resolution of the pain after treatment for an average of 3.2 years (range from 2–4 yr). NSAIDs were stopped and they remained pain free an average of 2.5 years (range from 1–3.5 yr) after the cessation of medical treatment. There was dense sclerosis around the nidus at the end of treatment, but the nidus had not disappeared in any patient.

Two patients continued to take NSAIDs at follow-up, 5 and 6 years after the diagnosis was established.

Two patients could not continue the medical therapy, although the pain was well controlled, because of gastrointestinal symptoms caused by the NSAIDs. They underwent successful curettage of the lesion.

Discussion

Osteoid osteoma is a benign tumour with a predilection for young people in the first 2 decades of life. The tibia is the commonest site.

The diagnosis can usually be made from the plain radiographs or CT scans, which will show the nidus. Bone scanning shows a very marked "hot spot."[1,4]

In our series, there was no histologic confirmation, as biopsy itself would be curative in most cases. However, all patients had blood work, standard radiography, bone scanning and CT. Little doubt remained as to the nature of the lesion.

As anecdotal cases, Golding,[4] Moberg[6] and Sherman[7] reported on isolated cases in which the patients or their families had refused operation but allowed periodic follow-up to the point of resolution of the symptoms. In their recent review of 100 patients in 1999, Campanacci and associates[1] reported 3 patients who had no operation because of little pain or because the site of the tumour was considered present too greater a risk to the patient.

Prostaglandins have been strongly implicated as the cause of pain in-patients with osteoid osteoma, and elevations of prostaglandins to more than 30 times the normal value have been demonstrated in the nidus.[8] The general mechanism of action of NSAIDs and acetylsalicylic acid is inhibition of the synthesis of prostaglandins, so the treatment is specific.

The only other series of patients treated nonoperatively before ours is that of Kneisl and Simon,[5] who reported on 9 patients. Of these, 6 patients had complete resolution of symptoms after taking NSAIDs for an average period of 2.75 years. These authors concluded that an initial period of treatment with NSAIDs might hasten resolution of the symptoms. Our experience is very similar to Kneisl and Simon's, with the pain subsiding at an average of 2.5 years after initiating NSAIDs. It is, however, difficult to confirm this impression as no long-term series has been reported in which no treatment was given.

The radiographs in our 7 patients whose pain resolved showed a persisting nidus but increased, denser sclerosis.

The 2 patients who failed medical treatment in our series had gastritis due to NSAIDs. They were then successfully treated with surgical curettage of the osteoid osteoma. Two others suffered from heartburn and mild gastritis and were offered surgery, but their symptoms were relieved by an H_2 receptor antagonist (ranitidine).

Surgery remains attractive (perhaps more to surgeons than patients), as pain is abolished immediately and patients avoid any harmful effects of long-term NSAID therapy.

A recent study reported by Kawaguchi and associates[9] demonstrated strong cyclooxygenase-2 immunoreactivity in the nidus of 6 of 6 osteoid osteomas. They suggested that cyclooxygenase-2 protein from osteoblasts in the nidus of intra-articular osteoid osteoma may play a role in activating the pathway of arachidonic acid metabolism, resulting in synovitis of the involved joint. We therefore plan to treat a new series of patients with the new cyclooxygenase-2 inhibitors, which

may eliminate or reduce the problem of gastric irritation due to NSAIDs.[10]

Conclusions

Prostaglandin suppression with NSAIDs can be very successful in treating patients with osteoid osteoma, although the course of treatment can be long. An average period of 2 to 3 years will abolish the symptoms in most patients. Certainly, the best indication for medical treatment is a lesion in a location difficult or hazardous to treat surgically, such as the femoral neck. We offer medical treatment first in all cases, and reserve surgery for the failures of medical treatment.

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