Inflammation as a target for treatment in hand osteoarthritis

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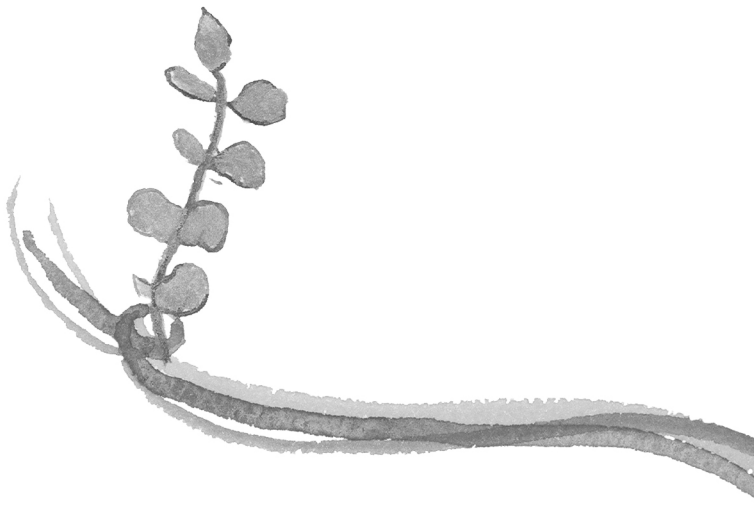
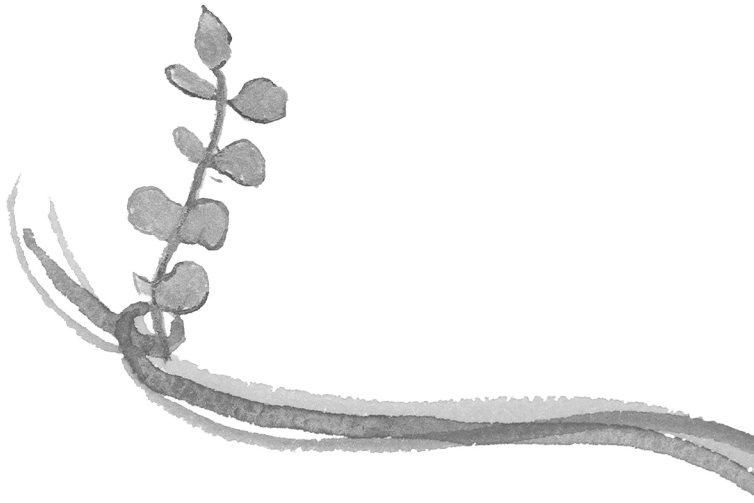
PART I

Current treatment



CHAPTER 2

Management of hand osteoarthritis



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INTRODUCTION

Hand osteoarthritis (OA) is one of the most common OA phenotypes, and it has a high clinical burden. It leads to joint pain, disability, decreased hand strength, and a reduced quality of life. Management strategies target symptom alleviation, involving a combination of non-pharmacologic, pharmacologic and surgical interventions.[1-4] While there is ongoing research to address the need for disease-modifying OA drugs (DMOADs), none have gained regulatory approval.

The management of hand OA will be reviewed here. The history and examination of the adult with hand pain, as well as the diagnosis, clinical manifestations, and management of OA affecting other joints are presented separately. (See "History and examination of the adult with hand pain" and "Clinical manifestations and diagnosis of osteoarthritis", section on 'Hand' and "Overview of the management of osteoarthritis" and "Management of knee osteoarthritis" and "Management of moderate to severe knee osteoarthritis".)

GENERAL PRINCIPLES

In addition to local signs and symptoms, the patient's beliefs, preferences, and expectations should be taken into account when managing hand osteoarthritis (OA). Educating patients about their disease and encouraging self-management are important features of OA treatment. (See "Overview of the management of osteoarthritis", section on 'General principles'.)

Education – The aim of education is to enhance the patient's understanding of their disease. Although the clinical benefits appear to be small, educating patients about the nature and course of the disease and their role in self-management principles and treatment options in hand OA is essential. Focus group interviews have shown that hand OA patients often perceive a lack of support and understanding of the impact of the disease on the individual.[5] Patients also described a lack of available information on how to manage their disease and contradictory advice from different health care professionals about possible treatment options. (See "Overview of the management of osteoarthritis", section on 'Education'.)

Self-management programs – Self-management programs are more complex interventions targeted at behavior modification that encourage patients to take an active role in the management of their condition. Two well-designed randomized controlled trials specifically targeting patients with hand OA have reported contradictory results. In one trial, there were no effects of an intensive treatment program including self-management, joint protection, and exercises.[6] The other randomized trial showed that a self-management program specifically targeting joint protection led to small improvements in pain and function after six months (measured as number of Osteoarthritis Research Society International [OARSI] responders), although this was not maintained over 12 months.[7] Joint protection encompasses specific

education and training in ergonomic principles and pacing of activity. Additional evidence for the effectiveness of self-management education programs comes from several systematic reviews and meta-analyses showing that these programs are effective in addressing pain and function, although effect sizes are very small and clinically negligible.[8,9] More evidence is needed to determine whether there is an optimal combination of non-pharmacologic therapies to offer patients as part of a multidisciplinary program. (See "Overview of the management of osteoarthritis", section on 'Self-management' and "Overview of joint protection".)

MANAGEMENT

General approach — A combination of nonpharmacologic and pharmacologic interventions is typically used in clinical practice for the management of hand osteoarthritis (OA), prioritizing therapies that are safer (eg, topical nonsteroidal antiinflammatory drugs [NSAIDs]) before considering drugs that can potentially cause adverse effects (eg, oral NSAIDs). The choice of therapy will also be guided by the presence of other joint involvement and comorbidities. Surgical interventions are generally reserved for patients with disabling symptoms refractory to nonpharmacologic and pharmacologic interventions. (See "Overview of the management of osteoarthritis", section on 'Overview of management' and "Comorbidities that impact management of osteoarthritis".)

It is also important to recognize the presence of different hand OA subsets, which often coincide, and may influence some treatment options. For example, patients with thumb-base OA may be more likely to benefit from splinting or surgical interventions. By contrast, erosive OA is known to have a more inflammatory phenotype, although no distinct treatment strategies are recommended for this subset. A more detailed description of the subsets of hand OA, including nodal, erosive, and thumb-base OA, can be found elsewhere. (See "Clinical manifestations and diagnosis of osteoarthritis", section on 'Nodal osteoarthritis' and "Clinical manifestations and diagnosis of osteoarthritis", section on 'Erosive osteoarthritis'.)

Finally, it should be noted that when comparing the effectiveness of different treatment strategies for patients with hand OA, the effect sizes of various nonpharmacologic and pharmacologic interventions are generally low.

Our overall management strategy is generally consistent with guidelines developed by professional organizations, including the American College of Rheumatology and Arthritis Foundation,[3,4] the European League Against Rheumatism,[10] and the National Institute for Health and Care Excellence.[2]

Initial management

Splints and other assistive devices — We suggest the use of splints for hand OA for pain relief, particularly in patients with symptomatic thumb-base OA. Splints and other assistive devices can be offered before or in combination with pharmacologic interventions, depending on the severity and location of symptoms. In some cases, splints for OA of the distal interphalangeal (DIP) joint may also be helpful, although these are less frequently prescribed. The type of splint

and the best instructions for splint use have not been compared in high-quality studies, and this should therefore be a shared decision with the patient. Assistive devices other than splints are also effective in improving a patient's satisfaction with activity performance. An assistive device is equipment that can increase, maintain, or improve functional capabilities of patients with hand OA. Examples include orthoses or splints but also cutlery with built-up handles, ergonomic pens, and devices to facilitate opening bottles, cans, or jars.

Splints are designed to support, protect, or immobilize a joint, which in hand OA patients is usually the thumb base. Many different splints are available: prefabricated or custom-made; incorporating only the first carpometacarpal (CMC-1) joint or also the wrist or the first metacarpophalangeal (MCP-1) joint; and fabricated of rigid, semirigid, or soft material. Instructions for use are also variable, including splints that are to be worn full time, whenever symptoms occur, during activities, or during the day or at night only. A systematic review summarized the evidence from nine studies investigating the effects of splints for thumb-base OA, although only two of these studies were found to be suitable for inclusion in a meta-analysis, which showed a significant but small effect on pain (effect size [ES] 0.37, 95% CI 0.03-0.71).[11] The type of orthosis to prescribe and the instructions for use can be a shared decision with the patient because there is no evidence available to guide this decision. In both studies, a rigid custom-made splint covering the thumb base and the MCP-1 joint was used, which was to be worn either during the day only[12] or during the night only.[13] Another meta-analysis showed that thumb-base splints were only effective when used for prolonged periods of time (at least three months).[14]

Splints for OA in the DIP joint are also available but are used less frequently and have not been investigated extensively. One prospective cohort study with 25 patients demonstrated that splint treatment significantly reduced hand pain,[15] though an open-controlled trial investigating DIP splints in 26 patients found no positive effects of nighttime DIP joint splinting on pain or function at three months follow-up and a small positive effect on pain after six months.[16]

One randomized controlled trial with 70 patients investigated the effect of other assistive devices, showing that the use of assistive devices in general significantly improved activity performance and satisfaction with performance after a three-month follow-up.[17]

Topical NSAIDs — Topical treatments can be an attractive treatment modality, especially in older adult patients with comorbidities. We suggest topical NSAIDs rather than oral NSAIDs for patients with hand OA. Topical NSAIDs appear to be effective for hand OA and do not seem to be associated with an increased risk of systemic adverse events.

Topical NSAIDs have not been studied as extensively in hand OA patients as they have been in patients with knee OA. A Cochrane review including 39 studies demonstrated that topical NSAIDs were effective in relieving pain in patients with chronic musculoskeletal complaints, mostly due to OA (number needed to treat 10, 95% CI 7 to 16).[18] Four studies specifically included hand OA patients, evaluating topical diclofenac (three trials) and ibuprofen (one trial) and showing similar positive results. One of these trials compared a topical with an oral NSAID in hand OA patients, demonstrating similar pain relief but fewer adverse events in the topical NSAID group.[19] Generally, topical application of NSAIDs was

well tolerated in the short to intermediate term evaluated in the randomized controlled trials included in the Cochrane review, although there was evidence of a slight increase in local adverse events (mostly mild skin reactions). (See "Management of knee osteoarthritis", section on 'Topical NSAIDs'.)

Long-term tolerability of up to 12 months of topical NSAIDs in older adult patients and patients with elevated risk of gastrointestinal, cardiovascular, and renal adverse events has been evaluated in a post hoc analysis of open long-term extension studies.[20] Results of this study, performed in 947 knee OA patients, suggest that diclofenac sodium gel is also safe for long-term use in patients at high risk of NSAID-related adverse events.

Exercise — We suggest hand exercises for patients with hand OA to improve function and muscle strength and reduce pain. Exercise regimens for hand OA usually involve both range of motion and strengthening exercises and are often home-based. Occupational therapy may provide patients with useful information regarding hand exercises.[7] A Cochrane review pooled results from five trials of variable quality, mainly concentrating on patients with thumb-base OA, and found that hand exercises led to modest improvements in hand pain (standard mean difference [SMD] -0.27, 95% CI -0.47 to -0.07), function (SMD -0.28, 95% CI -0.58 to 0.02), and stiffness (SMD -0.36, 95% CI -0.58 to -0.15) in the short term.[21] The exercises were generally well tolerated.

Inadequate response to initial management

Oral NSAIDs — We recommend oral NSAIDs for patients who respond inadequately to other therapies. Oral NSAIDs should be used at the lowest effective dose and for the shortest duration possible due to the well-known potential gastrointestinal, cardiovascular, and renal toxicities. This is especially relevant for patients with OA, who are often older and frequently have one or more comorbidities. A more detailed discussion on the choice of NSAIDs for the treatment of OA is presented separately. (See "Management of moderate to severe knee osteoarthritis", section on 'Choice and use of oral NSAID' and "Nonselective NSAIDs: Overview of adverse effects" and "NSAIDs: Adverse cardiovascular effects".)

In hand OA, only four trials have been conducted evaluating the efficacy of meclofenamate,[22] ibuprofen,[23] and lumiracoxib.[24] Of these preparations, meclofenamate is not often used due to the high rate of gastrointestinal side effects, and lumiracoxib has been withdrawn from most markets due to concerns of adverse events. These trials all demonstrated the superiority of NSAIDs over placebo with regard to pain relief. A meta-analysis of two of these trials resulted in an effect size similar to that in knee OA studies (ES 0.4, 95% CI 0.2 to 0.6).[1] The effectiveness of NSAIDs has been studied more extensively in patients with knee OA and has been shown to be superior in pain relief compared with both placebo and acetaminophen, although the additional pain relief of oral NSAIDs compared with acetaminophen is limited.[25] (See "Management of moderate to severe knee osteoarthritis", section on 'Efficacy of oral NSAIDs'.)

Refractory symptoms

Surgery — When nonpharmacologic and pharmacologic options do not result in adequate relief of symptoms, we refer patients for surgical management. Surgical intervention is generally reserved for patients with severe disease and refractory symptoms, whose quality of life is severely impacted. Several surgical options are available, the choice of which is mainly dependent on the type of joint causing complaints (DIP joint, proximal interphalangeal [PIP] joint, or CMC-1 joint); patient characteristics, including functional demands and personal preference; and preferences of the surgeon. Surgical intervention is most often done in thumb-base OA, although arthroplasty and arthrodesis of the DIP and PIP joints are not uncommon in severe hand OA patients.

Available surgical techniques for CMC-1 OA include trapeziometacarpal arthrodesis, trapeziectomy (with or without ligament reconstruction and tendon interposition [LRTI]), and trapeziometacarpal joint replacement. A Cochrane review from 2015 summarized the available evidence of seven different surgical techniques for thumb OA from 11 studies.[26] Most studies were low quality and none of the trials compared surgery with sham surgery or nonsurgical interventions. No single technique was clearly superior to another in terms of pain and physical function. In general, more complex procedures led to more complications. A systematic review with less stringent inclusion criteria, leading to inclusion of 35 studies, led to similar conclusions.[27] Trapeziectomy with or without LRTI is probably the most prevalently used surgical technique for thumb-base OA.

Even fewer studies have investigated surgical interventions in the finger joints, which are mostly retrospective case series often reported by an advocate of the technique.[28,29] For finger OA, the two main surgical techniques are arthroplasty and arthrodesis. There are no trials that compare surgical treatment of finger OA with a sham procedure or nonsurgical intervention. In general, arthroplasty has the advantage of retaining some joint motion, whereas with arthrodesis, range of motion is completely lost. The disadvantages of arthroplasty, however, are that it is associated with more complications and instability compared with arthrodesis.[30] Arthroplasties are typically done in PIP joints except for the index finger and arthrodesis in DIP joints.[29]

THERAPIES WITH LIMITED EFFICACY OR OF UNCERTAIN BENEFIT

Based on limited data and indirect evidence (eg, from knee osteoarthritis [OA]), there are other therapies that are of uncertain benefit in hand OA and thus not routinely recommended. Furthermore, several therapies exist that we do not routinely recommend due to lack of data demonstrating efficacy.

Acetaminophen — We do not routinely initiate treatment with acetaminophen for hand OA due to increased evidence of its limited efficacy on pain and the safety concerns pertaining to its use. No randomized trials have been published to investigate the efficacy of acetaminophen in hand OA, and its effects, if any, are likely small, based on indirect evidence from knee OA. A

network meta-analysis of pharmacologic interventions for knee OA concluded that the effect size (ES) of acetaminophen on pain at three months compared with oral placebo was small and not clinically relevant (ES 0.18, 95% CI 0.04 to 0.33).[25] In addition to the limited effects on pain, there is also a potential risk of harm associated with acetaminophen use. One review of eight observational cohort studies including more than 650,000 participants found a dose-response relationship between acetaminophen and increasing incidence of mortality and cardiovascular, gastrointestinal, and renal adverse events; however, limited conclusions can be drawn due to serious limitations in the study design.[31] (See "Management of knee osteoarthritis", section on 'Acetaminophen'.)

Chondroitin sulfate and glucosamine — We do not routinely recommend glucosamine or chondroitin for the treatment of hand OA, but, because of the beneficial safety profile, we do not discourage patients who wish to try these substances. Chondroitin sulfate and glucosamine are thought to be chondroprotective. They are among the most widely used over-the-counter nutraceutical products for OA but are scarcely studied in hand OA. Three placebo-controlled studies have been performed investigating chondroitin sulfate, of which one was a high-quality trial with 162 patients reporting improvements in pain and function in the treated arm,[32] and the other two were smaller, low-quality trials concluding positive effects on structural damage in erosive hand OA patients after follow-up of one to three years.[33,34] Studies of glucosamine have not been performed in hand OA patients. The substances are not associated with more adverse events than placebo, although glucosamine should not be given to patients with allergies to shellfish due to cross-reactivity. More data on the efficacy of chondroitin sulphate and glucosamine are available from randomized controlled trials in knee and hip OA patients. In meta-analyses summarizing the available evidence for the use of glucosamine, chondroitin, or combination preparations in knee and hip OA patients, a clinically meaningful effect could not be shown.[35,36]

Topical capsaicin – Topical capsaicin is available as an over-the-counter product. It may be used as an additive analgesic therapy for hand OA patients in whom other therapies do not suffice or are contraindicated. However, local side effects, mainly burning and stinging sensations, are often reported, and there is some uncertainty about possible long-term side effects associated with this medication. Its mechanism of action involves desensitization of skin nerve fibers through counterirritation. A randomized trial performed in 59 adults with hand OA reported better pain relief in patients treated with capsaicin cream compared with placebo, though patients using capsaicin cream experienced more local adverse effects.[37] Much of the clinical application for hand OA has been extrapolated from its use for knee OA. (See "Management of knee osteoarthritis", section on 'Topical capsaicin'.)

Other small clinical trials investigating topical capsaicin in OA patients in general have reported statistically significant but limited effects on pain relief.[38] Local adverse events are regularly reported, especially early in treatment, and patients commonly discontinue treatment because of these adverse events. Serious adverse events have not been reported, although some evidence suggests that capsaicin-mediated denervation might not be entirely reversible and that it might not be limited to the sensory nerves but may also affect autonomic nerve fibers.

Topical salicylates – We do not recommend the use of topical salicylates for treating pain in hand OA patients due to their lack of efficacy. Topical salicylates are available in the United States and Europe as over-the-counter products. The evidence for the use of topical salicylates is scarce. Two low-quality trials including patients with OA at various sites have been performed. No superiority over placebo was reported, whereas adverse events are common and more serious than those of topical nonsteroidal antiinflammatory drugs (NSAIDs).[38]

Nutritional supplements — Nutritional supplements such as avocado soybean unsaponifiables (ASUs) have also been considered for the treatment of hand OA, but there is no strong evidence to recommend the use of these supplements. ASUs, produced from avocado and soybean oil, are thought to block pro-inflammatory cytokines. Trials in hand OA patients are lacking. However, the use of ASUs has been studied in the context of knee and hip OA and is discussed in more detail separately. (See "Management of knee osteoarthritis", section on 'Other nutritional supplements'.)

Thermal modalities — Local application of heat may have positive effects on pain and grip strength in patients with hand OA. Heat application is commonly done with paraffin wax, but other applications include heat wraps, steam, and infrared radiation, and the choice of the type of delivery depends on the patient's personal preferences. Three small, low-quality trials (n = 174) investigating the effects of thermal modalities were summarized in a systematic review, reporting a possible effect on pain and grip strength.[39]

Diacerein — Diacerein is an oral interleukin (IL)-1beta inhibitor. It is available in a limited number of countries in Europe but not in the United States. One trial has been performed in hand OA patients and found no effect of diacerein compared with placebo.[40] Most data come from trials in knee and hip OA patients. A Cochrane review summarized the evidence from 10 trials with 2210 participants, concluding a minimal beneficial effect in terms of pain reduction.[41] More importantly, major safety signals have been identified, mainly diarrhea and liver toxicity, leading the European Medicines Agency (EMA) to issue a statement restricting the use of diacerein-containing medicines to patients younger than 65 with no concurrent diagnosis or history of liver disease and only half the normal dose (ie, 50 mg daily instead of 100 mg).[42]

Intraarticular glucocorticoids – Intraarticular glucocorticoid injections are widely used in patients with OA of the thumb base but can be applied to any of the hand joints. The use of glucocorticoid injections is in general not recommended in our clinical practice due to the limited efficacy, though intraarticular injections are known to be associated with a large placebo effect.[43] In some cases where there is severe local inflammation of an interphalangeal joint, glucocorticoid injections may be indicated. There is some evidence suggesting that intraarticular glucocorticoids could be beneficial for interphalangeal OA, whereas this is not true for thumb-base OA.[44] A systematic review of evidence for the different intraarticular treatments for hand OA found that in patients with thumb-base OA, intraarticular injections with glucocorticoids (three studies) were not more effective than placebo.[44] However, one high-quality placebo-

controlled trial with 60 interphalangeal OA patients showed that intraarticular glucocorticoid injection led to relief of pain during motion and decreased joint swelling during the 12-week follow-up period.[45] Only local adverse events were reported in the trials.

Intraarticular hyaluronans – The use of intraarticular hyaluronic acid (HA; also known as viscosupplementation) is not recommended due to the lack of data demonstrating benefit. This form of treatment has been used for OA of the thumb base. A systematic literature review of the evidence for intraarticular treatments for hand OA included three studies with intraarticular HA injections and found that they were not more effective than placebo.[44] Additional information on the use of hyaluronans for knee OA can be found elsewhere. (See "Management of knee osteoarthritis", section on 'Hyaluronans'.)

Opioids (including tramadol) — Due to the relatively high incidence of adverse effects associated with tramadol and other opioid analgesics, particularly among older adults, we recommend against using opioids whenever possible. Opioids are widely used in painful conditions, typically when patients respond insufficiently to conventional treatment or if other analgesics are contraindicated. These drugs, however, are associated with various adverse effects, including nausea, vomiting, dizziness, and constipation. (See "Overview of the treatment of chronic non-cancer pain", section on 'Opioids'.)

Although no direct evidence for the use of opioids for hand OA patients is available, the results from trials performed in knee and hip OA patients question whether the benefits of these analgesics outweigh the well-known risks, especially considering that hand OA patients are often older adults and more prone to these side effects (effect size [ES] tramadol 0.34, 95% 0.20 to 0.48,[46] and ES nontramadol opioids 0.28, 95% CI 0.20 to 0.35).[47] Additional information regarding the use of opioids for knee and hip OA can be found elsewhere. (See "Management of knee osteoarthritis", section on 'Opioids'.)

Systemic glucocorticoids – Several randomized studies have investigated the efficacy of low-dose systemic glucocorticoids on pain for hand OA with mixed results.[48-50] Data suggest that glucocorticoids can provide short-term pain relief in patients with signs of active joint inflammation who experience a flare of the disease, which is most commonly seen in patients with features of erosive hand OA (See "Clinical manifestations and diagnosis of osteoarthritis", section on 'Erosive osteoarthritis'). However, given the known side effects of systemic glucocorticoids, we discourage their routine use for the treatment of hand OA. Most patients with hand OA tend to have an insidious and progressive disease course rather than episodic flares. Also, identification of patients likely to benefit from this therapy is challenging given the limitations of being able to demonstrate active inflammation with standard imaging. The largest randomized trial to study the role of glucocorticoids in hand OA included 92 patients, all of whom were eligible if they had symptomatic hand OA as well as clinical and sonographic signs of inflammation in their distal and proximal interphalangeal joints.[50] Patients who received 10 mg of prednisolone during six weeks reported greater improvements in pain (measured on a visual analog scale) compared with placebo. After discontinuation of prednisolone, the beneficial

effect disappeared. Thus, a short course of oral glucocorticoids could provide transient relief in selected patients with signs of active joint inflammation who want short-term pain relief. Prolonged prescription of glucocorticoids is discouraged.

Hydroxychloroquine – Hydroxychloroquine, an antimalarial drug, is not uncommonly prescribed (off-label) for hand OA patients with inflammatory signs, analogous to the treatment of other inflammatory rheumatic diseases (see "Antimalarial drugs in the treatment of rheumatic disease"). Though previous small, mostly open-label studies indicated possible benefits, data from two randomized trials could not support these findings.[51-53] Both trials reported no difference in symptom relief after 6 and 12 months' follow-up compared with placebo. One trial also assessed structural damage, but found no beneficial effect of hydroxychloroquine treatment.[52] The use of hydroxychloroquine is therefore not recommended for hand OA.

Methotrexate – Methotrexate is regularly used in the treatment of rheumatoid arthritis (RA) patients (see "Use of methotrexate in the treatment of rheumatoid arthritis"). Although synovitis is often present in osteoarthritic hand joints, little evidence is available that methotrexate is an effective treatment modality for hand OA patients. One small open study was performed in erosive hand OA patients.[51]

Biologic agents – The use of tumor necrosis factor (TNF)-alpha inhibitors, which are effective for the treatment of RA and psoriatic arthritis, has been applied to OA with mixed results,[54-58] and is discussed in detail separately (see "Investigational approaches to the management of osteoarthritis", section on 'Tumor necrosis factor-alpha inhibitors'). A case series of three erosive hand OA patients receiving anakinra, an IL-1 receptor antagonist, reported positive results,[59] but more data investigating the efficacy of IL-1 receptor antagonists in hand OA are needed.

PROGNOSIS

Although radiographic progression in hand osteoarthritis (OA) is thought to be a slow but ongoing process, the course of pain and disability is heterogeneous. For example, one study showed that over a period of six years, symptoms of half of the patients deteriorated, although 25 percent reported fewer symptoms.[60] Moreover, the same study showed a mismatch between radiographic and clinical progression, although this could be due to lack of sensitivity of the measurement instruments used. Erosive OA is considered to have a higher clinical burden and worse prognosis than nonerosive OA.[60-62] Furthermore, studies have shown that thumb-base OA contributes more to pain and disability than finger OA.[63] There are no interventions to date that can alter the course of the disease.

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Osteoarthritis".)

SUMMARY AND RECOMMENDATIONS

- All patients with hand osteoarthritis (OA) should be thoroughly assessed with regard to their knowledge about the disease and their expectations of treatment. Educating patients about their hand OA is essential, with the aim of enhancing the patient's understanding of their disease. (See 'General principles' above.)
- A combination of nonpharmacologic and pharmacologic interventions is typically used in clinical practice for the management of hand OA. The choice of therapy will also be guided by the presence of other joint involvement and comorbidities. Surgical interventions are reserved for patients with symptoms refractory to nonpharmacologic and pharmacologic interventions. (See 'General approach' above.)
- In patients with hand OA, particularly involving the thumb base, we suggest the use of a splint for pain relief (*Grade 2C*). Splints and other assistive devices can be offered before or in combination with pharmacologic interventions, depending on the severity and location of symptoms. The type of splint and the best instructions for splint use have not been compared in high-quality studies, and this should, therefore, be a shared decision with the patient. Assistive devices other than splints are also effective in improving a patient's satisfaction with activity performance. (See 'Splints and other assistive devices' above.)
- In patients with OA localized to the hand, we suggest initial treatment with a topical nonsteroidal antiinflammatory drug (NSAID) rather than an oral NSAID (*Grade 2B*). The risk of gastrointestinal, renal, and cardiovascular toxicity is lower with topical NSAIDs as compared with their oral formulations due to the reduced systemic absorption. The tolerability profile is also better with topical NSAIDs, with mild skin rashes being the most commonly reported side effect. (See 'Topical NSAIDs' above.)
- We suggest hand exercises for patients with hand OA to improve function, muscle strength, and reduce pain (*Grade 2C*). Exercise regimens for hand OA usually involve both range of motion and strengthening exercises and are often home-based. (See 'Exercise' above.)
- For patients with hand OA who respond inadequately to initial therapy, we suggest oral NSAIDs, preferably on an as-needed basis (*Grade 2B*). Oral NSAIDs should be used at the lowest effective dose and for the shortest duration possible due to the well-known potential gastrointestinal, cardiovascular, and renal toxicities. This is especially relevant for patients with OA, who are often older adults and frequently have one or more comorbidities. (See 'Oral NSAIDs' above.)

- We refer patients to surgery when significant joint-related symptoms persist despite the use of nonsurgical interventions. Surgical intervention is generally reserved for patients with severe disease and refractory symptoms, whose quality of life is severely impacted. (See 'Surgery' above.)
- There are several approaches that have been used to treat patients with hand OA that are of uncertain benefit and thus not routinely recommended. These include acetaminophen, glucosamine and chondroitin, thermal modalities, topical capsaicin, topical salicylates, nutritional supplements, thermal modalities, diacerein, intraarticular glucocorticoids, intraarticular hyaluronans, opioids (including tramadol), systemic glucocorticoids, hydroxychloroquine, methotrexate, and biologic agents.
- Although radiographic progression in hand OA is thought to be a slow but ongoing process, the course of pain and disability is heterogeneous. Erosive OA is considered to have a higher clinical burden and worse prognosis than nonerosive OA. Furthermore, studies have shown that thumb-base OA contributes more to pain and disability than finger OA. There are no interventions to date that can alter the course of the disease. (See 'Prognosis' above.)

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