CONTINUING PROFESSIONAL UPDATE

MI PODIATRIC CPU TOOLS
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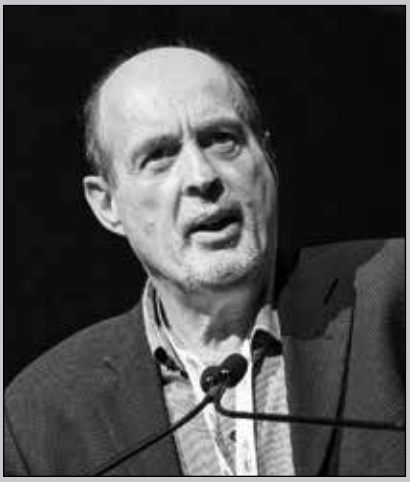
Podiatric Management of People with Rheumatoid Arthritis



Keith Rome
Visiting Professor,
University of Southampton.
Editor in Chief (Australia),
Journal of Foot and Ankle Research

TABLE 1: COMMON INFLAMMATORY ARTHRITIC CONDITIONS OBSERVED IN THE FOOT

Rheumatoid arthritis
Gout
Psoriatic arthritis
Ankylosing spondylitis
Systemic sclerosis
Systemic lupus erythematosus

Introduction

The aim of the article is to inform podiatrists about the management strategies used to treat foot problems in people with rheumatoid arthritis (RA). The article includes evidence from the current literature. The role of the podiatrist is to relieve pain, maintain function and mobility, prevent or minimise deformity and reduce the risk of ulceration to maintain and improve individuals' independence and overall quality of life.

It is necessary to briefly describe the current impact of COVID-19 on foot health. A recent study measured the impact of COVID-19 restrictions upon foot health, demonstrating an association between poor foot health or foot pain and reduced physical activity during lockdown. Importantly, the findings show how the pandemic restrictions have interrupted support networks integral to maintaining foot health [1].

There are a number of excellent additional resources available on the foot in rheumatology [2-4].

RA is the most common inflammatory arthritis seen in the UK and will be the main focus of this article. There are other inflammatory arthritic conditions often encountered by podiatrists (Table 1). RA causes inflammation and destruction of synovial joints and, in many cases, has an additional systemic component which is associated with increased morbidity and mortality [2]. The cost of the disease, both in individual and societal terms, is considerable. Figures 1-3 and Figure 5 demonstrate typical features of an established RA foot.

Figure 1: A typical rheumatoid foot. Copyright of Keith Rome.

Figure 2 Splay foot in RA. Copyright of Dr Anita Williams.

In a dedicated rheumatology foot health service, callus reduction, footwear advice and provision, and orthosis prescription are the mainstays of management [5]. Foot and ankle management for RA features in many clinical practice guidelines. Unfortunately, supporting evidence in the guidelines is of low quality. Agreement levels are predominantly 'expert opinion' or 'good clinical practice' [6].

Pharmacological Management Principles

RA is a complex and ever-changing disease with treatment options that are just as intricate. Treatment regimen is based on disease severity, location of injury, comorbidities or contraindications, cost of drug, and the need for monotherapy or a combination of drugs. The podiatrist must be aware of the effects of each drug category in order to monitor for signs and symptoms which the patient may present. Two-line pharmacological managements used in the treatment of RA have been reported [7].

First-line Drugs: The overall goal of first-line treatment is to relieve pain and decrease inflammation. Medications, considered to be fast-acting, are nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroids [8]. NSAIDs and corticosteroids are recommended for use in the initial stages of RA for short-term and symptomatic pain relief. There are minimal side effects of NSAIDs, but signs and symptoms that may present include gastro-intestinal (GI) bleeding, cardiovascular issues, and dizziness. Corticosteroids are also used in the initial stage as a means of reducing disease activity in patients who are awaiting a response to disease modifying anti-rheumatic drug (DMARD) therapy [7]. Typical adverse effects of corticosteroids include immunosuppression, which often leads to infection, the development of osteoporosis, steroid-induced myopathy, osteonecrosis and other metabolic conditions such as Cushing's syndrome [8].

Second-line Drugs: These provide disease-modifying therapy. Effective RA treatment strategies include DMARDs. These are drugs that come in many forms and are taken as an aggressive treatment in the early stages of RA and throughout the disease's active states. DMARDs work most effectively when they are taken as soon as possible after disease diagnosis. They are also taken during active disease states when inflammation occurs. They can be taken in combination with other medications such as immunotherapy drugs called biologics [8]. DMARDs consist of conventional DMARDs and Biologic DMARDs. Commonly used conventional DMARDs include methotrexate, leflunomide, hydroxychloroquine, and sulfasalazine. From the 1990s Biologic DMARDS include: anti-TNF-blockers (also called inhibitors) and include adalimumab (Humira), certolizumab pegol (Cimzia), etanercept (Enbrel), and infliximab (Remicade). When RA medications are taken the goal is to decrease the inflammation in the joint tissue which then slows or lessens the inflammatory process which diminishes the damage to joints. Effective treatment with DMARDs can result in diminished symptoms and joint destruction over time.

EVIDENCE REVIEW 1: ONYCHOCRYPTOSIS IN PATIENTS WITH RA ON BIOLOGIC THERAPIES [9]

Onychocryptosis can be accompanied by local sepsis, which is a serious concern in patients on biologic therapies. The full extent and impact of foot problems in these patients is not clear, but a retrospective 14-month audit identified nine cases of onychocryptosis developing in RA patients on biologic therapy.

Five of the affected patients were female, mean age was 43 years, and mean disease duration was 10.9 years. Etanercept was the drug being used in seven cases, and infliximab and abatacept were each being used by one patient. None of the patients had experienced previous episodes of onychocryptosis. The mean time between commencement of biologic therapy and symptom onset was 20 weeks. All 9 patients had their biologic therapy suspended prior to onychocryptosis treatment for an average of 2 weeks until fully healed. Eight of the patients underwent partial or total nail avulsion, three with matrix phenolisation to prevent regrowth. All patients were also treated with systemic antibiotics. The outcome was successful in all nine patients, allowing reinstitution of biologic therapy.

The overall goal of second-line treatment is to promote remission by slowing or stopping the progression of joint destruction and deformity. Medications are considered to be slow-acting because they take weeks to months to be effective. Both DMARDs and biologic DMARDs are similar in that they can adversely affect the GI system, pulmonary function, blood pressure, and cause skin irritation [8]. Although these effects may be seemingly minor in comparison to more malignant conditions, the podiatrist should monitor and if the symptoms persist the patient should inform their health care professional. Many of these medications may cause the patient to become frail in stature, so the podiatrist must exercise caution during any management session. In addition, patient education is a significant component of care. Patient information relating to skin and nail care prior to any conservative or surgical procedures, such as onychocryptosis should be considered. The clinician is also responsible for providing relevant treatment while remaining within the podiatric scope of practice [8]. For those patients undertaking podiatric surgery, there is the increased risk of infection with anti-TNFs and the risk of developing or making worse chronic infections like TB, or leading to a flare in disease activity with effects throughout the body and ultimately a worse outcome for the patient [4]. While the current evidence base does not permit the formulation of definitive guidelines, stopping biologics between 2-4 days prior to planned surgery in collaboration with the rheumatologist or specialist nurse; only restarting when healed. Evidence Review 1 illustrates podiatrists performing surgical procedures such as avulsion should be aware of current perioperative guidelines, and should work closely with the rheumatology team [9]. Otter [10] suggested a need for specialist foot health care monitoring and improvements in patient education which could be provided by podiatrist.

Non-Pharmacological Management Principles

Podiatrists play a crucial role in non-pharmacological interventions which may be beneficial in the management of RA which includes all aspects of foot health management (Table 2).

Foot Health Management

Further to early aggressive medical management, UK podiatric clinical guidelines suggest that management requires an integrated coordinated multidisciplinary, multi-professional approach, with care focussed upon the needs of the affected person, providing access to a combination of expertise and competencies [5, 6]. Patients should have access to a full multidisciplinary team for assessment and intervention early in the disease process, which should include foot health assessment [5, 6].

TABLE 2: FOOT HEALTH MANAGEMENT INCLUDES:

- Assessment of footwear
- Management of plantar callus
- Dealing with nail and skin pathologies
- Foot orthoses
- Footwear
- Information and education for patients on foot health and shoe advice
- Assessment of falls and fear of falling
- High-risk management of the foot with vasculitis or ulceration
- Foot surgery

Assessment of Footwear

Footwear is important in providing protection, accommodating deformity and assisting function [9]. Different footwear characteristics, including heel height, lack of support and poor fit, may result in increased pain as well as the development of musculoskeletal complications, foot pain and impairment. Finding appropriate footwear has been identified as a major barrier to footwear-based treatment adherence in people with inflammatory arthritis [11,12]. An important issue for podiatrists to consider is patients' perception of what is important to them relating to footwear. For tpeople with RA, comfort followed by fit, style and ease to put on/off have been reported.

Management of Plantar Callus

In RA, prominent metatarsal heads are subject to excessive shear and compressive forces during gait.

Figure 3 Forefoot deformities in RA. Copyright of Dr Anita Williams.

These stresses stimulate the stratum corneum to produce well circumscribed painful skin lesions or callosities. Previous studies suggested that sharp scalpel debridement of painful forefoot plantar callosities in RA reduced pain and focal pressures and increased walking function, but these changes were no greater than for a sham procedure [13,14]. Reduction of the plantar foot pressures that cause the callus is an alternative treatment and can be achieved with foot orthoses and appropriate footwear [15].

A consensus of opinion from both specialist podiatrists and academics recommends that adhesive plantar padding should not be used to provide pressure relief, especially where there are concerns regarding tissue viability [5]. Additionally, when infection is suspected, they recommended a caveat of 'minimal or no debridement'. Overlying callus should then be debrided in order to expose the underlying infection and in the case of existing foot ulceration, it is appropriate that surrounding callus and necrotic tissue is also debrided [5].

Nail and Skin Pathologies

Patients with RA of long duration will develop significant nail pathologies and skin atrophy. Bacterial nail infection may be present and there is a need for antibiotics and/or advice if the patient is being managed with biologic therapy [5]. Fungal infections (diagnosed from mycology results) could be a manifestation in people with inflammatory arthropathy and advice from a rheumatologist or dermatologist is required. One study suggested that a high prevalence of cutaneous warts in people with RA was probably due to defects in some immune mechanisms, independent of immunosuppressive drugs [16]. The role of the podiatrist is to provide palliative treatment for nails and skin and the reduction of thickened nails has been advocated.

Foot Orthoses

There is a broad range of orthoses that employ a variety of different approaches to modify foot and lower limb structure and function. The main groups of orthoses are: (i) simple cushioning insoles; (ii) insoles to which padding may be added and (iii) contoured orthoses intended to change the function of leg and foot joints. However, the boundaries between the different modes of action of the types are not exact and an individual device may include elements with more than one mode of action [17].

One study described the current foot orthoses prescription habits of podiatrists from the UK, Australia and New Zealand for people with RA [18]. The results found considerable variation in the self-reported foot orthoses prescription habits. The majority of respondents in the UK reported they were more likely to prescribe customised foot orthoses than other foot orthoses types for established RA. The prescription pattern among UK respondents was consistent regardless of whether they worked exclusively in the public sector or in private practice (Figure 4). The study found higher use of electronic scanning among UK respondents working solely in private practice compared to those working solely in the public sector, with none of the latter group using this method for either stage of the condition.

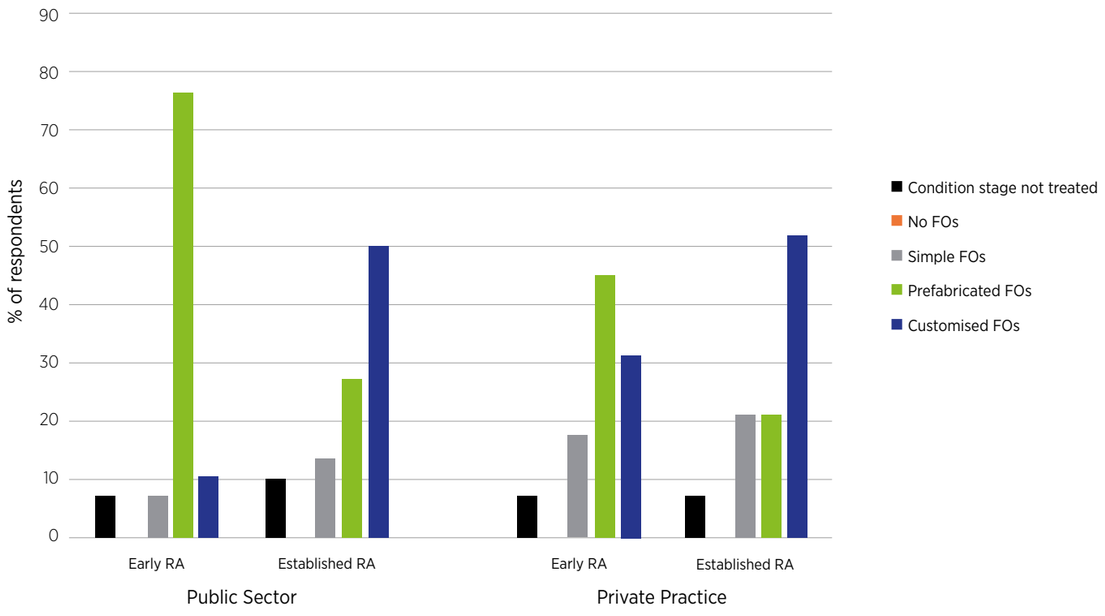


Figure 4 Foot orthoses type prescribed for early and established RA among podiatrists in the UK by working sector (cited from Chapman LS, Redmond AC, Landorf KB, et al. Foot orthoses for people with rheumatoid arthritis: a survey of prescription habits among podiatrists. J Foot Ankle Res 2019; 12: 10)

EVIDENCE REVIEW 2:
THE USE OF DIFFERENT MATERIALS AND TYPE OF FOOT ORTHOSES USED FOR PEOPLE WITH RA [21]

A recent review found a comparison between different materials used (soft versus semi-rigid), types of foot orthoses (custom-made versus ready-made; total-contact versus non-total contact), or modifications applied (metatarsal bars versus domes). Also, different techniques to construct custom-made foot orthoses were compared (standard custom-moulding techniques versus more sophisticated techniques). An immediate effect for reduction of forefoot plantar pressure was found in favour of treatment with soft foot orthoses compared to semi-rigid foot orthoses.

Foot orthoses in people with RA have been used in early and established RA. In early RA, targeted management of foot pathology with foot orthoses during a 'window of opportunity' is crucial before irreversible damage occurs [19]. Woodburn [20] demonstrated that foot orthoses are beneficial in reducing pain and for improving foot posture. This may have sustainable effects in response to an abnormal mechanical component which can predispose the patient to the development of a foot deformity over time.
In established RA, the use of customised or pre-fabricated foot orthoses has been reported. Customised accommodative foot orthoses (also known as total contact orthoses) are designed so that the material closely follows the contours of the underside of the foot. The purpose is to more evenly redistribute the pressures applied to the foot in standing and walking. Evidence Review 2 illustrates the use of different materials and type of foot orthoses in people with RA.

Footwear

Footwear interventions include off-the-shelf footwear, therapeutic footwear, and therapeutic footwear combined with foot orthoses [22].

Off-the-shelf footwear

Women with RA may seek retail footwear as an alternative to therapeutic footwear, but retail footwear may not be suitable, and can exacerbate their foot problems [23]. Naidoo [24] demonstrated that women with RA face significant barriers in accessing appropriate retail footwear. Currently there are many manufacturers of retail footwear that are appropriate for the foot health of patients with RA. According to Williams [25] the features of this footwear that are valuable for the RA foot include (i) stable heel – broad enough for stability or elongated/flared to increase this effect further, (ii) extended heel counter to provide support for the rearfoot; (iii) padding around the top opening of the shoe – to reduce irritation to the retro-calcaneal area and the infra-malleolar areas, (iv) no prominent internal seams to prevent rubbing; (v) winged 'toe puff' to ensure no pressure over the toes; (vi) increased toe spring or rocker sole to reduce forefoot plantar pressures and (vii) low laced for ease of access.

In a recent study aimed to determine the factors that influence the choice of appropriate retail footwear by women with RA, women with RA have clear concepts about what features a shoe should have in relation to achieving comfort [26]. Women with RA seek footwear with adequate cushioning, width, a flexible sole, lightweight, made from breathable materials and that are easy to apply. However, there is a constant compromise between achieving comfort and their feelings about their appearance and how they feel others perceive them.

EVIDENCE REVIEW 3: EXPERIENCE OF WEARING FOOT ORTHOSES FOR 6 MONTHS IN PEOPLE WITH RA [30]

A prospective study recorded the experiences and perceptions of patients with RA before and after wearing foot orthoses for 6 months. It found patients reported that wearing foot orthoses may have a positive impact on physical activity and improve general wellness and quality of life. However, to achieve the potential positive benefits, despite the positive impact of wearing orthoses, participants stated that complexities of finding suitable footwear acted as a blocker.

Figure 5 Midfoot collapse in a person with established RA. Copyright of Dr Anita Williams.

Therapeutic footwear

Footwear characteristics using therapeutic footwear have included:

- Extra-depth in the forefoot region to accommodate foot orthoses and forefoot deformity,
- Soft leather upper and smooth lining to offer protection,
- Laces,
- Padded heel counter to improve fit at the heel;
- Long inside counter to improve rearfoot stability and arch support [27]

A key characteristic of therapeutic footwear is the provision of a wide and deep toe box. Therapeutic footwear and orthoses are often used in conjunction. Recent work has explored the use of foot orthoses, including semi-rigid and soft devices, manufactured as both prefabricated and custom made [28,29]. People with RA also needed to wear suitable footwear (defined as footwear which accommodates both the foot and the insole while maintaining the fit and function of the shoe [29].

Evidence Review 3 reflects the perception of foot orthoses by RA patients after 6-months of wear [30].

Falls and Fear of Falling

Adults with RA have an increased risk of falls. The risk of falls may be higher in RA patients because of the lower limb disease, muscle weakness, impaired mobility, gait disorders, balance, and postural instability. Podiatrists should be aware of inappropriate footwear when assessing older adults. Ill-fitting footwear and specific design features, such as elevated heels and backless styles, can impair balance control and heighten the risk of falling. The fear of falling is associated with restriction of physical activity, de-conditioning, poor health-related quality of life, more falls, greater frailty, and increased mortality. A recent study demonstrated the association between fear of falling and foot pain, impairment and disability [31]. Although foot care is routine practice for some older adults to prevent diabetic foot ulceration or relieve symptoms such as foot pain, new footwear interventions such as a prototype footwear and insoles designed to improve dynamic balance or textured insoles are emerging with the potential to ameliorate balance and walking impairments [32].

Multifaceted podiatric interventions, which include appropriate footwear and importantly patient education, may have the capacity to reduce falls in older adults with RA. A recent review reported that multifaceted podiatry interventions and multifactorial interventions involving referral to podiatry produce significant reductions in falls rate in community settings, but the evidence for podiatry interventions in care homes is inconclusive [33].

Provision of information and education for patients regarding foot health and shoe advice

Patient education is recognised as important for people with RA in relation to foot health [34]. Providing education during podiatry consultations, in the form of information on the purpose and use of clinical interventions, such as foot orthoses and specialist footwear, could potentially improve patients' use of them [27]. The skills required to deliver patient education are now embedded in the undergraduate curriculum and considered a core component of podiatry care. It is believed to be a valued and beneficial activity supporting aspects of foot management which patients can perform themselves [34]. Podiatrists should direct patients to RA or arthritis specific web sites such as Arthritis Research UK (www.arthritisresearchuk.org)

EVIDENCE REVIEW 4: FOOT HEALTH EDUCATIONAL NEEDS OF PEOPLE WITH RA IN RELATION TO ITS CONTENT, TIMING, MODE OF DELIVERY AND THE PERCEIVED BARRIERS TO ITS PROVISION [35]

The online survey of 249 people with RA revealed the need for foot health education strategies to be employed at an early stage of disease diagnosis through their whole experience of the condition and living with foot problems. The authors concluded that foot pathology in people with RA has a bio-psychosocial impact on their lives. Foot health and related information appears to be considered rarely within the medical consultation. Access to foot health information and services is limited owing to a lack of patient and/or health professional awareness, with a detrimental impact on the prognosis of their foot health. The importance of foot health in people with RA should be reinforced for patients and health professionals alike.

to provide information and education for people with RA. Foot health education early in the disease is seen as essential in enabling people to be proactive about their foot health and to help prevent early deterioration [35]. Evidence Review 4 demonstrates the barriers perceived by people with RA on foot educational needs.

Semple [36] reported that people with RA may benefit from self-managed foot care, providing that it is personalised and each individual's physical capability to undertake self-care is assessed.

Management of the high risk foot with vasculitis or ulceration

The foot is at high risk of ulceration in people with RA. These often occur at multiple sites and are reoccurring, with the potential risk of infection increased due to RA diagnosis and disease modifying medications [37,38].

The risk is elevated because of the tendency to vasculitis and skin atrophy. This is also due to the deformity accompanying the disease, which leads to the development of areas of high pressure, both on the dorsal and on the plantar aspects of the foot [38]. Whilst ulcers are small and shallow, time to achieve healing is slow, posing infection risk. Reduced protective sensation is common in affected patients. People with RA report that foot ulceration has an impact on their health-related quality of life across physical, social and psychological domains. There is a need for clearer care pathways for patients affected by foot ulceration, improved patient education and better coordination of care [39]. The site of the ulcer will give clues as to the important underlying pathology. Breakdown over obvious pressure sites, such as the dorsum of deformed interphalangeal joints, might be expected to respond well to offloading of pressure. Breakdowns on the dorsum of the foot and lower leg are more likely to be of predominantly vasculitis origin and need multidisciplinary management, including review of antirheumatic medication. The vasculitis associated with RA is also reported to respond well to anti-TNF therapy [40].

Foot Surgery

Whilst it is recognised that advances in the medical management of RA with biologic therapies has seen a reduction in some of the major foot problems that require surgery, some patients still develop problems with their feet and may require surgical intervention. Reasons for surgical referral may include persistent pain, stiffness, synovitis in the foot or ankle joints, tenosynovitis or tendon ruptures, foot deformities causing restriction in mobility due to pain, or recurrent ulceration and osteomyelitis/septic arthritis. It is generally accepted that referrals for surgical opinion should be considered for patients with RA when optimum conservative management has failed to bring their symptoms to an acceptable level. However, clinicians should always be aware of potential exceptions such as the requirement for earlier synovectomy in severe disease, to prevent rapid joint destruction

Despite advances in the pharmacological therapy, one review reported care should be taken relating to anti-TNF therapy, in conjunction with the surgeons and/or the multidisciplinary team on local guidelines to determine the most suitable course of action with regards to continuing or stopping biologic therapy prior to foot and ankle surgery [41]. A recent study reported that educating the patient on potential complications, such as wound dehiscence, infection, and venous thromboembolism, as well as general postoperative expectations, is essential when evaluating the rheumatoid patient for surgery [42].

From a patient's perspective, one study aimed to explore which factors are important to people with RA when they evaluate the outcome of foot and ankle surgery [43]. The study found that people with RA interpret the outcome of foot surgery using multiple interrelated factors, particularly functional ability, appearance and surgeons' appraisal of the procedure. While pain was often noted, this appeared less important than anticipated. These factors can help clinicians in discussing surgical options in patients. ■

CLINICAL TAKE HOME MESSAGES:

- Foot problems in people with RA deem it a high-risk foot due to foot impairment and disability.
- Nail and skin care is important due to poor mobility affecting the patient's ability to conduct footcare.
- Foot health education is recommended in foot health management guidelines, providing information relating to the purpose and use of clinical interventions such as foot orthoses, specialist footwear and general disease and foot health information in relation to RA.
- Foot health education early in the disease is seen as essential in enabling people to be proactive about their foot health and to help prevent early deterioration.
- Podiatrists should be aware of medications patients are being prescribed including adverse effects and contra-indications.

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CPU article number: 005
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