RESEARCH ARTICLE

Guidelines for the Management of the Foot Health Problems Associated with Rheumatoid Arthritis

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Abstract

Background. Rheumatoid arthritis (RA) as a chronic systemic disease, commonly affects the feet, impacting negatively on patients’ quality of life. Specialist podiatrists have a prime role to play in the assessment and management of foot and ankle problems within this patient group. However, it has been identified that in many areas there is no specialist podiatry service, with many patients being managed by non-specialist podiatrists. Therefore, the North West Clinical Effectiveness Group for the Foot in Rheumatic Diseases (NWCEG) identified the need to develop ‘practitioner facing’ guidelines for the management of specific foot health problems associated with RA.

Methods. Members of a guideline development group from the NWCEG each reviewed the evidence for specific aspects of the assessment and management of foot problems. Where evidence was lacking, ‘expert opinion’ was obtained from the members of the NWCEG and added as a consensus on current and best practice. An iterative approach was employed, with the results being reviewed and revised by all members of the group and external reviewers before the final guideline document was produced.

Results. The management of specific foot problems (callus, nail pathology, ulceration) and the use of specific interventions (foot orthoses, footwear, patient education, steroid injection therapy) are detailed and standards in relation to each are provided. A diagrammatic screening pathway is presented, with the aim of guiding non-specialist podiatrists through the complexity of assessing and managing those patients with problems requiring input from a specialist podiatrist and other members of the rheumatology multidisciplinary team.

Conclusion. This pragmatic approach ensured that the guidelines were relevant and applicable to current practice as ‘best practice’, based on the available evidence from the literature and consensus expert opinion. These guidelines provide both specialist and non-specialist podiatrists with the essential and ‘gold standard’ aspects of managing people with RA-related foot problems. Copyright © 2011 John Wiley & Sons, Ltd.

Keywords

Feet; guidelines; rheumatoid arthritis

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Published online in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/msc.200
**Introduction**

Rheumatoid arthritis (RA) is a chronic systemic disease that commonly affects the feet (Grondal et al., 2008), and as Shi et al. (2000) identified, virtually 100% of patients report foot problems within 10 years of disease onset. The structural and functional changes in the feet often affect gait and mobility (Turner et al., 2006; Woodburn et al., 2002a; Turner et al., 2006), impacting negatively on the patient’s quality of life (Otter et al., 2010; Wickman et al., 2004) and specifically restricting the choice of footwear (Goodacre and Candy, 2010; Williams et al., 2007, 2010). For some people with RA, the structural changes are a factor in foot ulcer development (Firth et al., 2008), with the risk of infection, particularly if the patient’s medical management includes the use of immunosuppressive drugs (Otter et al., 2004; Wilske, 1993).

The specific goals of foot care for the problems associated with RA are to relieve pain, maintain function and prevent ulceration and infection, thereby contributing positively to the patient’s quality of life (Woodburn and Helliwell, 1997). These goals can be achieved with the use of foot health interventions such as care of the skin and nails, foot orthoses and specialist ‘therapeutic’ footwear. The use of foot orthoses and therapeutic footwear are supported by national guidelines (Arthritis and Musculoskeletal Alliance [ARMA], 2004; National Institute for Clinical Excellence [NICE], 2009), which also recommend that people with RA should have access to foot health assessment and management early in the disease process. Foot health providers, such as podiatrists, have a prime role to play in the assessment and management of foot and ankle problems within this patient group (NICE, 2009). This view is supported by the Podiatry Rheumatic Care Association (PRCA) Standards of Care, ARMA (2004) and the British Society for Rheumatology (BSR) (Luqmani et al., 2006). They all strongly advocate the need for a dedicated and specialist podiatry service for the diagnosis, assessment and management of foot problems associated with RA, along with periodic review, particularly for those patients with high levels of disease activity. The PRCA (2010) guidelines state that:

> ‘People whose condition does not respond to treatment, who experience new or worsening symptoms, or whose personal situations change, should have timely access to health professionals trained to carry out specific care or treatment, or who can refer them to other specialist care if needed. Foot health service providers should be aware of indications for urgent referrals, surgical referrals and disease red flags.’ (Standard 22, page 22)

Despite evidence for the need of podiatry services (Williams and Bowden, 2004) and efforts to ensure that the recommendations made by NICE (2009) and the PRCA Standards of Care are met, there are identified problems with access to podiatry services. The problems identified in both the National Audit Office report (2009) and the Rheumatology Futures Group report (2009) was that podiatry was an underused and under-resourced service and that in many areas there was no specialist podiatry service. Limited services were also identified by Juarez et al. (2010), who found that in one district hospital, less than one-third of RA patients had access to specialist care. An earlier review of the provision of foot health services in rheumatology departments in the UK (Redmond et al., 2006) found that only 50% reported adequate basic foot care services and less than one in 10 had formal care pathways or mechanisms for referral. Interestingly, a fair proportion of RA patients access foot care through non-specialist routes. Williams and Bowden (2004) identified that 19% of the 139 patients surveyed accessed foot care through the private sector and 21% were receiving foot care at local NHS clinics by non-specialist podiatrists.

In support of specialist foot care, the PRCA Standards of Care are ‘patient facing’ in respect of the service that patients with foot problems can expect. However, due to the lack of specialist podiatry provision for RA patients, there is a need for ‘practitioner facing’ management guidelines, to provide non-specialist podiatrists and other foot health providers with specific guidance for the management of people with RA-related foot health problems. Our aims, therefore, were to develop ‘practitioner facing’ guidelines on the management of specific foot health problems associated with RA using an evidence-based approach and consensus of specialist podiatrist practitioners.

**Methods**

**Guideline development**

A guideline development group was formed from members of the North West Clinical Effectiveness...
Group (NWCEG). The group included the Chair of the NWCEG (S.D.), the academic lead for the group (A.W.), two academics with a podiatry background (A.G. and C.B.) and three specialist podiatrists (K.L., A.B. and C.L.). Each member of the group took responsibility for specific aspects of management of the foot affected by RA: the management of callus, management of nail conditions, management of ulceration, foot orthoses and footwear, steroid injection therapy, surgery, ultrasonography and patient education.

All relevant available databases were searched (from 2000 to 2010), specifically Medline, Embase, the Cochrane Database and the Cochrane Musculoskeletal Group Register. References from all articles identified from the databases were also hand searched. The terms ‘rheumatoid arthritis’ and ‘foot’ were combined and searched in conjunction with the following treatment terms: ‘treatment’, ‘management’, ‘services’, ‘guidelines’, ‘standards of care’, ‘surgery’, ‘ultrasound’, ‘injection therapy’, ‘orthoses’, ‘footwear’, ‘callus’, ‘foot ulcers’ and ‘patient education’.

The evidence was used to inform each section of the initial draft of the guidelines. These were then taken to the NWCEG for review; where evidence was lacking, expert opinion was obtained and added to each section of the guidelines as a consensus of current best practice. Each section was then further developed and edited by one member of the guideline group (A.W.) to ensure consistency in presentation and content. This formed the second draft of the guidelines, which were sent to three external reviewers, two consultant rheumatologists and the Chair of the Podiatry Rheumatic Care Association. Following feedback from the external reviewers, the final guideline document was produced.

Results

Guideline summary

The achievement of the group was that a consensus was agreed for all aspects of management for people with RA-related foot pathology, based on available evidence and best practice. The guidelines comprehensively cover all aspects of current foot health management in relation to the requirements of a service, referral pathways, management of specific conditions and the evaluation of interventions.

The philosophy of podiatry services for people with RA is to relieve pain, maintain function and mobility, prevent or minimize deformity and reduce the risk of ulceration, thereby maintaining or improving the individuals’ independence and overall quality of life. Aligned with this philosophy is the fact that podiatrists are ideally placed to alert other members of the multidisciplinary team (MDT) if the patient's health status deteriorates or if other, profession-specific, interventions are needed, such as physiotherapy or occupational therapy.

The guidelines contain specific reference to the role of the clinical specialist and both the essential and ‘gold standard’ requirements for a podiatry service. The rationale for identifying both the essential and gold standard requirements is to contextualize the importance of foot care for this patient group, while acknowledging that some services are restricted in relation to advanced resources, such as ultrasonography or steroid injection therapy. Further, podiatry services that are developing in relation to the management of people with RA need guidance as to the ideal, ‘gold standard’ resources that could be added as funding becomes available.

The guidelines recommend that a local pathway of referral should be in place to facilitate appropriate and timely patient referrals to a specialist podiatrist by any member of the podiatry team, the rheumatology MDT, primary care team or private practitioner. In the absence of a specialist podiatrist, there is guidance for referral to other members of the rheumatology MDT, so that patients with complex foot problems, such as ulceration, receive the right management in relation to their foot and general disease management (see Figure 1).

The aims of the foot screening pathway and a primary assessment/annual screening tool (an example of which is in the full guideline document) are to enable identification of those patients who are at risk of ulceration or the development of deformity, and to initiate appropriate and timely interventions. In addition, it is recommended that practitioners working in the private sector make links with local specialist podiatry services or rheumatology services in order to facilitate timely referral for patients whose foot health deteriorates.

A thorough primary assessment, followed by an annual review, is essential in managing patients’ foot health with the aim of identifying changes in foot health and monitoring foot health interventions. Despite individual podiatry services having different arrangements for new and existing patients in both
Foot Screening Pathway for People with RA

Does the patient complain of foot symptoms?

YES → FOOT HEALTH EDUCATION

NO → ANNUAL REVIEW WITH PODIATRIST

FOOT HEALTH ASSESSMENT

SYMPTOMS ASSOCIATED WITH RA
- Disease flare
- Generally unwell
- Weight loss
- Fatigue
- Signs of depression

SKIN
- Ulceration (NB cellulitis may be minimal – indicator of infection may be pain)
- Requirement for antibiotics, radiographs
- NB Patients on biologic therapy require urgent consultant advice if feet ulcerate
- Evidence of fungal infection (diagnosed from mycology results)

VASCULAR
- Claudication
- Rest pain
- Vasculitis
- Absent pulses (with hand held Doppler)
- Need for nail surgery
- Evidence of fungal infection (need for antibiotics and/or advise if patient is on biologic therapy)

FOOT FUNCTION AND GAIT
- Excessive pronation
- Pain and swelling associated with joints/tendons
- Inability to fit into retail shoes
- Evidence of pressure related lesions such as callus

NEUROLOGICAL
- Sensory loss
- Nerve entrapment/compression

FOOT STRUCTURE
- Evidence of bacterial infection (need for antibiotics)
- Absent pulses
- Need for nail surgery
- Evidence of fungal infection (diagnosed from mycology results)

FOOT
- Structure Pain and/or swelling associated with joints/tendons
- Inability to fit into retail shoes
- Evidence of pressure related lesions such as callus

NEUROLOGICAL
- Sensory loss
- Nerve entrapment/compression

FOOT
- Structure

RHEUMATOLOGIST

RHEUMATOLOGY SPECIALIST NURSE

PAIN MANAGEMENT TEAM

SPECIALIST PODIATRIST

ORTHOTIST

PHYSIOTHERAPIST

OCCUPATIONAL THERAPIST

SMOKING CESSATION

DIETICIAN

Figure 1 Foot health screening pathway for people with RA foot-related problems. This figure is available in colour online at wileyonlinelibrary.com

NB IN THE ABSENCE OF A SPECIALIST PODIATRIST -
- ADVICE SHOULD BE OBTAINED FROM THE PATIENT’S CONSULTANT AS DENOTED BY A RED LINE
- ADVICE SHOULD BE OBTAINED FROM AN ORTHOTIST AS DENOTED BY A BLUE LINE
- BLACK LINES DENOTE DIRECT REFERRAL
- GREEN LINES DENOTE MULTIDISCIPLINARY WORKING BETWEEN THE CORE RHEUMATOLOGY MULTIDISCIPLINARY TEAM
primary and secondary care services and private practice, an initial foot assessment and screening should be carried out for all patients at the first point of contact with a podiatrist.

The management of specific foot problems (callus, nail pathology, ulceration) and the use of specific interventions (foot orthoses, footwear, patient education, steroid injection therapy) are detailed and standards in relation to each are provided within the guidelines. As it was acknowledged by the NWCEG that some foot problems are ideally managed through collaboration with other members of the rheumatology MDT, the guidelines also make recommendations for referral and collaboration with other members of the MDT.

The following are examples of the essential standards of assessment, management and collaboration. However, readers should access the full guidelines for the details and supporting information for all the guideline standards.

**Assessment and management of foot problems**

All patients should be evaluated at the initial assessment for the need for foot orthoses, footwear advice and, where necessary, therapeutic footwear. The use of foot orthoses and therapeutic footwear are advocated by NICE (2010) and there is some evidence that supports the use of therapeutic footwear for reducing pain and improving mobility (Williams et al., 2007) in those with established foot deformity.

In the case of early disease, feet should be assessed for evidence of abnormal foot function within 18 months from onset of symptoms, before tarsal erosions occur (Woodburn et al., 2002a). Functional foot orthoses should be provided as soon as possible following diagnosis, in order to reduce pain, improve function and maintain alignment of the architecture of the foot (Woodburn et al., 2002b).

Steroid injection therapy should be considered for targeting localized, inflamed joints when the general disease is controlled, but only in the absence of infection (Ward et al., 2008). However, any associated structural deformity should be managed with foot orthoses in conjunction with steroid injection therapy (Helliwell et al., 2006).

Callus over the plantar metatarsal area should be assessed in relation to symptoms and causative factors before debridement is considered. According to Davys et al. (2005), debridement of callus over the plantar metatarsal areas should be carried out with caution, particularly over prominences such as those caused by subluxation of the metatarso-phalangeal joints, where it may be considered to have a protective role. If callus is removed, pressure-relieving insoles or foot orthoses should be provided (Davys et al., 2005), in order to protect the foot from the risk of ulceration. Other problems involving the skin are fungal infections, which can also infect the nails. Fungal infections should be investigated and treated, as they can lead to ulceration and secondary bacterial infection (Jones, 1997).

Although there is no direct evidence of its benefits, there was a consensus from the group members that patient education should be delivered as an essential component of foot health and general health management.

**Referral and collaboration**

It was agreed through consensus in the group that those patients with severe symptoms and/or complications, plus those with medical management that puts them at risk of the serious consequences of foot infections, should be managed by a specialist podiatrist. Specialist podiatrists mostly work within the rheumatology MDT or, if not, have clear and defined referral pathways for urgent problems that need to be seen by the rheumatologist. However, some services do not have specialist podiatrists, with many of their patients being seen by a generalist podiatrist or by a private practitioner (Williams and Bowden, 2004). It was felt, therefore, that these practitioners should have clear guidance as to when to refer to a rheumatologist or other members of the MDT in order to protect the patient from the severe consequences of foot infections and ulceration.

A patient’s rheumatologist or rheumatology nurse must be contacted as a matter of urgency if patients who are being managed with biologic therapy develop foot ulceration and infection (Otter et al., 2004). Optimum ulcer management for any patient can only be achieved by a holistic and integrated MDT approach (Firth et al., 2008). Further, there was consensus agreement that advice should be taken from the patient’s rheumatologist on the management of infected ingrown nails or if there is a need for nail surgery, particularly if the patient’s medical management is with biologic therapy.
Other reasons for urgent collaboration include tendon ruptures and septic arthritis, which require immediate referral for both medical and surgical management (Helliwell et al., 2006).

**Foot health measurement**

The use of foot health measurement tools, such as the Foot Impact Scale (Helliwell et al., 2005) or the Salford Arthritis Foot Evaluation instrument (Walmsley, 2010), are considered as being a desirable adjunct to clinical practice in order to evaluate the impact of foot problems on the individual, but also to provide evidence for the level of effectiveness of interventions. Further to these measurement tools, the use of musculoskeletal ultrasound is considered a useful method of monitoring foot health, as well as its role in the assessment and diagnosis of specific foot and ankle pathology (Bowen, 2003).

**Discussion**

The aim of these guidelines was to provide all podiatrists and other foot health providers with pragmatic clinical recommendations for the management of RA-related foot and ankle problems.

The authors acknowledge that there were limitations to the approach taken to guideline development, in that it was not based on a systematic review of the literature and there was no meta-analysis of data from the available evidence. However, a pragmatic approach was taken, whereby the available evidence was synthesized with the clinical expertise of the members of the NWCEG. This approach ensured that the guidelines were relevant and applicable to current practice as ‘best practice’, based on the available evidence from the literature and consensus expert opinion. It was also an iterative process in which ‘expert’ external reviewers contributed to the final document.

Future work will involve the revision of the guidelines biannually, in order to embrace the emerging research on foot and ankle management in people with RA. Additionally, the NWCEG is developing an audit tool, so that the standards can be mapped against clinical practice.

**Conclusion**

These guidelines provide both the essential and ‘gold standard’ aspects of managing people with RA-related foot problems, in order to maintain and improve their foot health, mobility and participation in life activities and occupations.

**Acknowledgements**

Members of the NWCEG: Susan Cunliffe, Jane Humphreys, Rose Hynriw, Gemma Iliadis, Deborah Kirk, Angela Knott, Adrian Leach, Danielle Meadows, Sarah Naylor, Elaine Pettigrew, Veronica Potter, Patricia Smith, Suzanne Smith, Julia Stell.

External reviewers of the guidelines: Dr Vinodh Devakumar, Dr Neil Snowden, Robert Field (Chair PRCA).

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