A new podiatry service for patients with arthritis

Keith Rome, Kathryn Erikson, Anthony Ng, Peter J Gow, Hazra Sahid, Anita E Williams

Abstract

Aim The aims of this study were to identify the impact of a new podiatric rheumatology service on reducing foot pain, impairment and disability in patients with foot problems associated with rheumatic disease, and to report on patient satisfaction with the service.

Method A retrospective study of 245 patients with rheumatic disease at Counties Manukau DHB was conducted. Foot pain, impairment and disability were measured using a self-reporting patient outcome measure, the Foot Function Index. A range of podiatric interventions were reported. A self-administered, postal patient satisfaction questionnaire was sent to 148 patients.

Results Over two-thirds of patients were observed with hallux valgus (bunions). The results demonstrate a significant reduction in foot pain (p<0.001) from initial visit to second visit (18% reduction in pain). A significant decrease in foot disability (p=0.04) was found from initial visit to second visit. No significant differences were seen with foot impairment (p=0.78). A variety of intervention measures were used with 24% of patients being prescribed foot orthoses and 28% of patients given footwear advice. The patient satisfaction survey found 84% of patients reported they were satisfied with the new service and 80% of patients reported that the service helped with their foot problems.

Conclusion The current service meets the needs of patients who suffer from rheumatological foot conditions such as rheumatoid arthritis and gout. The need for good foot education, provision of foot orthoses and advice on footwear are crucial to reduce the burden on patients with rheumatological foot conditions.

The role of the podiatrist in the rheumatology team is becoming recognised as a vital component in the integrated care given to patients by the multidisciplinary team. Increasingly, consultants and their teams are requesting specialist foot care services and it is suggested that the podiatrist is a key practitioner in the management of patients with musculoskeletal disease.

It has been recommended that patients should understand the role and have access to a podiatrist. Podiatrists have a prominent role to play in symptom relief and in improving the quality of life because, for patients with inflammatory arthritis, the involvement of the feet, even to a mild degree, is a significant marker for impaired mobility, functional incapacity and negative psychosocial impact.

Despite evidence for the need of podiatry services, podiatry is frequently an underused and under-resourced service and in many areas in New Zealand there is no specialist podiatry service.
In support of specialist foot care, a new podiatric rheumatology service was established following an evidence-based approach highlighting the need for improved access to podiatry care for rheumatology patients in New Zealand. In two subsequent publications, we have highlighted that patients with RA and gout have an increased need for a range of basic foot care services. Further, there is evidence that early intervention for existing or potential foot problems can improve long-term outcomes.

The aims of this study were to identify the impact of a new podiatric rheumatology service on reducing foot pain, impairment and disability in patients with foot problems associated with rheumatic disease, and to report on patient satisfaction with the service.

Methodology

Study design—The retrospective study design was based on adult patients with a history of documented foot problems associated with rheumatic diseases. Patients were eligible if they had a referral made by rheumatologists, rheumatology nurse specialists and podiatrists within Middlemore Hospital and/or Manukau Super Clinic. Northern X Regional Ethics Committee approved the study [NTX/11/EXP/156].

All referrals were graded by one of the podiatrists (KE) and sent to the Rheumatology Scheduler for an appointment. Two experienced podiatrists were employed with a mean clinical experience of 15 years. Specialist training in dealing with the rheumatic foot was undertaken by the podiatrists.

Foot pain and disability—Disease impact was measured using the Foot Function Index (FFI). The FFI is a measure of foot pain and its impact on mobility and activity limitation. The FFI has been validated for patients with RA and used to evaluate the effectiveness of foot orthoses and footwear for those with rheumatoid arthritis. It is a self-administered questionnaire consisting of 23 items grouped in three domains: foot pain (nine items), disability (nine items) and functional limitation (five items). All items are rated using 100mm visual analogue scales, and higher scores indicate greater pain, disability and limitation of activity and thus poorer foot health.

Podiatric intervention—A number of interventions were made available including advice relating to footwear and foot care, reduction of callus and corns, conservative treatment of nail conditions, debridement of gouty tophi, management of foot ulcers, prescription of foot orthoses and provision of exercise programmes. Foot orthoses covers a range of devices including: pre-fabricated, simple insoles and shoe inserts/modifications. Referral to other services was also reported.

Patient satisfaction—Furthermore, a self-administered postal survey was carried out to evaluate patient satisfaction of the current podiatric service. This covered the period from July 2010 to March 2012. Age, ethnicity, gender, disease duration and type of rheumatological condition were recorded. 148 questionnaires were sent out.

Data analysis—Data were analysed using SPSS v20.0 software. Gender, rheumatic disease and podiatric interventions were described as percentages. All other demographic characteristics were described as the mean (SD). Paired-tests were undertaken to look at significant differences of foot pain and disability between baseline measurements and follow-up visit.

Results

Participant demographics and disease characteristics

A total of 245 referred patients were assessed and treated over the 18 month time-period. The mean (SD) age of 55.7 (13.3) years old was recorded with 69% being women. 155 patients were managed for a further treatment, 76 for a third visit and a further 55 patients for subsequent visits.
The median duration of RA disease was 15 (IQR: 7.3–25) years which suggests a well-established disease with levels of functional disability. A range of rheumatic diseases were seen including: RA (52%), osteoarthritis (19%), gout (14%); psoriatic arthritis (8%); scleroderma (4%); ankylosing spondylitis (2%) and Sjögren’s syndrome (1%).

**Foot pain and disability**

Over two-thirds of patients were observed with hallux valgus (bunions). Over 90% of patients in the study presented with symptomatic callus under the plantar surface of the foot and/or on the toes. The results demonstrate (Table 1) a significant reduction in foot pain (p<0.001) from initial visit to second visit (18% reduction in pain). A significant decrease (Table 1) in foot disability (p=0.04) was found from initial visit to second visit (23% reduction in disability). No significant differences were seen with foot impairment (p=0.78) but we did find a 10% decrease in foot impairment.

**Table 1. Foot pain and disability scores**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot Function Index [Pain]: Visit 1</td>
<td>29.7 (12.0)</td>
</tr>
<tr>
<td>Foot Function Index [Pain]: Visit 2</td>
<td>24.3 (12.7)</td>
</tr>
<tr>
<td>Foot Function Index [Disability]: Visit 1</td>
<td>41.2 (24.2)</td>
</tr>
<tr>
<td>Foot Function Index [Disability]: Visit 2</td>
<td>31.9 (26.3)</td>
</tr>
<tr>
<td>Foot Function Index [Impairment]: Visit 1</td>
<td>4.2 (5.5)</td>
</tr>
<tr>
<td>Foot Function Index [Impairment]: Visit 2</td>
<td>3.8 (5.8)</td>
</tr>
</tbody>
</table>

**Podiatry interventions**

A range of interventions were used including treatment of nail deformities, callus reduction, ulcer management (as well as debridement gouty tophi), clinical padding, foot orthoses, footwear advice, foot health education and provision of exercise programmes (Table 2). A further 69 patients were referred to other services.

**Table 2. Podiatric interventions**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservative treatment of nail conditions, n (%)</td>
<td>23 (8%)</td>
</tr>
<tr>
<td>Callus reduction, n (%)</td>
<td>28 (10%)</td>
</tr>
<tr>
<td>Ulcer debridement, n (%)</td>
<td>12 (4%)</td>
</tr>
<tr>
<td>Clinical padding, n (%)</td>
<td>15 (5%)</td>
</tr>
<tr>
<td>Foot orthoses, n (%)</td>
<td>69 (24%)</td>
</tr>
<tr>
<td>Footwear advice, n (%)</td>
<td>82 (29%)</td>
</tr>
<tr>
<td>Foot health education, n (%)</td>
<td>13 (5%)</td>
</tr>
<tr>
<td>Exercise, n (%)</td>
<td>44 (15%)</td>
</tr>
<tr>
<td>Referral for bespoke footwear, n (%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>Discharged, n (%)</td>
<td>4 (1%)</td>
</tr>
</tbody>
</table>
Foot orthoses—The range of foot orthoses included simple insoles, pre-fabricated contoured foot orthoses and modifications to foot orthoses.

Referrals—Referral to other health care professionals included: radiography, vascular consultant, orthopaedic, physiotherapy, district nurses, dietician and occupational therapy (Table 3). Further investigations included blood tests and referral back to the rheumatology nurse and rheumatologist.

Table 3. Referrals to other services

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthotic centre, n (%)</td>
<td>20 (29%)</td>
</tr>
<tr>
<td>Physiotherapy, n (%)</td>
<td>18 (26%)</td>
</tr>
<tr>
<td>Medical imaging, n (%)</td>
<td>7 (10%)</td>
</tr>
<tr>
<td>District nurse, n (%)</td>
<td>5 (7%)</td>
</tr>
<tr>
<td>Blood tests, n (%)</td>
<td>4 (6%)</td>
</tr>
<tr>
<td>Orthopaedics, n (%)</td>
<td>4 (6%)</td>
</tr>
<tr>
<td>GP, n (%)</td>
<td>4 (6%)</td>
</tr>
<tr>
<td>Rheumatologists, n (%)</td>
<td>3 (4%)</td>
</tr>
<tr>
<td>Occupational therapy, n (%)</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Dietician, n (%)</td>
<td>2 (3%)</td>
</tr>
</tbody>
</table>

Patient satisfaction survey of the podiatric rheumatology service—From 148 questionnaires sent out there were 62 responses (response rate: 42%). The mean (SD) age was 59.9 (11.5) years old and most respondents were female (86%). Over 74% of respondents were European, 13% Maori, 5% Pacific Islanders and 8% Asian. We found that the majority of patients reported that the podiatry service was very useful (63%) and helped with their foot problems (80%). Overall, the patients reported that they were satisfied with the podiatry service (84%).

Discussion

General findings and supporting literature—The purpose of this study was to undertake a clinical evaluation of the podiatric rheumatology services in Counties Manukau. Overall, this study demonstrates that, in this particular outpatient clinic, poor foot health and foot pain is highly prevalent in patients with rheumatic diseases. Most patients with RA had foot involvement ranging from callus, corns and lesser toe deformities.

Foot problems are known to occur in other rheumatic diseases such as gout.\(^5,6\) Patients with chronic gout suffer with high levels of foot pain associated with poor footwear, and find difficulties in purchasing adequate footwear.\(^6\) Our findings also demonstrated severe pain, impairment and limited activity suggesting most patients suffer with long-term disability from a range of chronic rheumatological conditions.

The current study found significant reductions in pain and impairment over 18 months. Furthermore, the results demonstrated significant differences from baseline to next visit with the podiatric interventions. Improved clinical results with podiatric intervention for patients with RA are clearly demonstrated. The data indicates that the
clinical needs of patients were addressed by the podiatric intervention of footwear advice, education, callus reduction and prescription of foot orthoses.

It is known from previous work that there is a link between levels of usage and patient satisfaction with footwear and podiatric interventions, and therefore we can assume that the levels of podiatric interventions were associated with greater satisfaction.

The prescription of foot orthoses and footwear for patients with rheumatological foot conditions has been previously reported. We found that the majority of referrals were to the Orthotic Centre for prescribed therapeutic footwear.

The use of therapeutic footwear for reducing pain and improving mobility in those with established foot deformity has been documented. Specialist prescription footwear should be available for patients who cannot fit into appropriate retail footwear and, in this area, podiatrists and orthotists should collaborate to achieve the optimal clinical outcome.

Those patients with severe symptoms and/or complications were referred back to the rheumatologist or other members of the MDT in order to protect them from the severe consequences of foot infection and ulceration. Advice was also obtained from the patient's rheumatologist on the management of infected ingrown nails or if there was a need for nail surgery; particularly if the patient's medical management was with biologic therapy.

Scalpel debridement was always carried out with caution, the pressure areas offloaded and, when necessary, a referral made to the orthopaedic team. Scalpel debridement is a quick and simple intervention to perform for painful plantar callosities in rheumatoid arthritis but is poorly researched.

Woodburn demonstrated that reduction of plantar callus with scalpel debridement in rheumatoid arthritis reduces forefoot pain (up to 48%) but for a very limited time (7 days). Reduction in callus resulted in an increase in forefoot pressures and suggests that reduction of callus over prominent metatarsal heads may lead to tissue damage. This would be of particular concern in patients with reduced tissue viability (long term steroid therapy, vasculitis, concurrent peripheral vascular disease) and/or neuropathy.

While debridement alone particularly over prominent metatarsal heads or any other prominent joint can lead to tissue damage, many of the patients present with hemorrhagic callus over these joints, indicating incipient ulceration. We believe debridement alone is insufficient treatment. However, debridement, offloading and cushioned dressings can provide short-term relief of symptoms and prevent ulceration until the patient is seen by the orthopaedic team.

Williams and Bowden reported that rheumatology teams and podiatry services should collaborate and aim to improve the foot health service to patients with disabling foot problems. The results from the current study indicate that for any future rheumatology service in New Zealand podiatrists should be part of the multidisciplinary rheumatology team and have received specialist training in this area to reduce the burden of rheumatic foot problems.
The results from the patient satisfaction survey showed that patients were highly satisfied with the care provided by the rheumatology specialist podiatrist. The quality of care from the patients’ perspective is increasingly considered an important component of comprehensive chronic disease management.\textsuperscript{21}

Patients who are satisfied with health care are more likely to be involved in medical decision making, to be compliant with treatment strategies and are less likely to experience adverse health outcomes.\textsuperscript{22} Previous studies have reported on patient satisfaction of a rheumatology service,\textsuperscript{23,24} but this is the first to be undertaken specially relating to a podiatric rheumatology service in New Zealand.

**Future developments**—Self-management programmes of foot problems have been advocated for patients with rheumatic diseases. A recent study undertaken in the UK using a self-management foot care programme for 30 patients with RA demonstrated that just over 50\% of patients were physically able to undertake some aspects of self-managed foot care, including conservative management of nails, callus filing and daily hygiene and inspection.\textsuperscript{25}

We plan to provide patients with information and education using the recently reformatted Arthritis NZ ‘Care of Feet’\textsuperscript{26} pamphlet to enable patients to recognise the signs of foot problems and to understand what to do if variations occur.

Anecdotal evidence from this study suggests that the use of the structured, self-administered questionnaires were difficult to complete. This was due to a number of patients being unable to comprehend the wording of the questions or because English was not their first language.

We are currently piloting the use of face-scales as an alternative method. These are often used in paediatric services and research to evaluate foot pain, impairment and disability. We also found that a number of patients with chronic tophaceous gout and coexisting diabetes had previously been managed on a regular basis by the Podiatry Diabetic Foot Ulcer Team at the Manukau Super Clinic. However, several of these patients had to be discharged back into the community, missing out on regular podiatry care.

Over the past 18 months, some of these patients have been re-referred by the rheumatology podiatry service. Further, the characteristics of foot ulceration associated with chronic gout are an area for future study.

A multidisciplinary team (MDT) approach (incorporating various healthcare professions such as specialist nurses, physiotherapists, occupational therapists and podiatrists) is considered essential for the management of patients with rheumatoid arthritis.\textsuperscript{27}

Future developments should include further integration of specialist podiatrists into the MDT with the emphasis on minimising the effects of the disease and managing the patient’s foot health needs. This integrated approach utilises the skills and knowledge of all MDT members, and fosters good interprofessional working practices, with the patient being the focus throughout the assessment and management of their needs.
Conclusion

The current work has highlighted that the burden of foot pain and disability in patients with rheumatic diseases can be reduced with a range of foot care interventions provided by specialist podiatrists.

A baseline foot examination at first presentation has identified patients with existing or imminent needs. Further, this foot examination provides a comparison for evaluating any changes either due to disease progression or the outcomes of foot health interventions.

Future developments may incorporate self-educational foot health programmes and collaborating formally with other health care professionals such as orthotists and orthopaedic surgeons, with the aim of improving even further the foot health outcomes.

Overall, this research has demonstrated that the current service has impacted on the foot health of these patients positively and that it meets the perceived need of the patients attending the service.

Competing interests: Nil.

Author information: Keith Rome, Professor in Podiatry, Health and Rehabilitation Research Centre, AUT University, Auckland, New Zealand; Kathryn Erikson, Senior Podiatrist, Department of Rheumatology, Counties Manukau District Health Board, South Auckland, New Zealand; Anthony Ng, Senior Podiatrist, Department of Rheumatology, Counties Manukau District Health Board, South Auckland, New Zealand; Peter J Gow, Associate Professor in Rheumatology, Department of Rheumatology, Counties Manukau District Health Board, South Auckland, New Zealand; Hazra Sahid, Rheumatologist Nurse, Department of Rheumatology, Counties Manukau District Health Board, South Auckland, New Zealand; Anita E Williams, Senior Lecturer Podiatry, University of Salford, Directorate of Prosthetics, Orthotics and Podiatry, Salford, United Kingdom

Acknowledgements: The authors would like to thank the rheumatology staff, Lauren Peet for collecting the data, Leanne Elder and Brad Healy (at Counties Manukau, Auckland) and the patients who took part in this study.

Correspondence: Professor Keith Rome, School of Rehabilitation and Occupation Studies, Health and Rehabilitation Research Centre, Discipline of Podiatry, AUT University, Private Bag 92006, Auckland, 1142, New Zealand. Email: krome@aut.ac.nz

References: