The Rheumatoid Foot

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Abstract: Foot problems are very common in patients with rheumatoid arthritis. However, foot care services are generally insufficient. Problems of joint instability, walking difficulties and decrease in functional ability may ensue. A comprehensive and multidisciplinary rheumatoid foot program that tailors to needs of rheumatoid arthritis patients is recommended.

Keywords: Foot, rheumatoid arthritis

Introduction

Foot complications are among the most serious and costly complications of rheumatoid arthritis (RA). The strategy of rheumatoid foot care includes early diagnosis, multidisciplinary treatment, rehabilitation and comprehensive patient education. Together with close monitoring of the disease progress, patient mobility can be enhanced.

RA is a chronic progressive inflammatory polyarthritic disease first described by Brodie in 1819. Forty percent of RA patients develop joint erosions within the first year of disease. Within 2 years, a significant proportion (up to 75%) of RA patients develops joint erosions which may proceed to joint deformities.1

Foot pain is one of the major complaints in patients with RA. At diagnosis, 16% of RA patients have foot joint involvement.2 The prevalence of foot pain in RA patients increases to 90% as disease progresses.3 Foot pain may lead to joint instability, walking difficulties and decrease in functional ability.4

The goal of the podiatrist in rheumatoid foot care is to reduce foot-related pain, maintain or improve foot function and mobility, while protecting skin and other tissues from damage.

Forefoot Pathologies in the Rheumatoid Foot

In the rheumatoid foot, the intrinsic-extrinsic toe muscle balance is lost and fixed clawing of the lesser toes develops. This causes foot pain in the toe box of the shoe and may trigger patients to seek medical advice. Deformities of the forefoot are often caused by arthritis of the hindfoot which results in external rotation of the first metatarsal, and instability of the mid-tarsal joints. These deformities increase the extent of hallux valgus and its displacement under the second toe (Figure 1).

In the presence of a broadened forefoot, deformity of the great toe and clawing of other toes, symptoms will persist independent of inflammatory activity. Painful, thickened calluses may then develop beneath the prolapsed metatarsal heads, dorsally over the proximal interphalangeal joints and medially over the first metatarsal head (Figure 2).

Valgus Ankle Deformity

In the hindfoot, pes planovalgus is common. It is caused by excessive pronation of the subtalar joint. An inefficient or damaged tibialis posterior tendon, dysfunctional joint capsule and weakened collateral ligaments cause collapse of the medial longitudinal arch of the foot. With weight-bearing, the talus is forced anteriorly and medially. Persistent weight-
hearing irreversibly stretches the supporting ligaments and tendons, resulting in a valgus hindfoot (Figure 3).

Deformities of the hindfoot can be the most important barrier to walking. Instability of the ankle increases with progressive dislocation of the talus. Pain in the hindfoot may be localized to the lateral side of the ankle when associated with valgus and lateral impingement. Most patients with involvement of the hindfoot complain of ill-defined pain with restriction of walking on uneven ground.

Although the pain is mechanical in nature, paraesthesiae may result from entrapment of a peripheral nerve or peripheral neuropathy. The tarsal tunnel, with the posterior tibial nerve, is often compressed by synovitis. Although the incidence of tenosynovitis of the foot is relatively lower than that of the hand it may compromise the function of the tendons. Dysfunction of the tendon of tibialis posterior is shown by its inability to perform a single heel rise.

**Podiatry Service to the Rheumatoid Foot**

We have identified four areas of foot health service that should be provided as part of a multidisciplinary foot health team in rheumatology.6

1. Education and self management advice
2. Prescription of devices such as insoles/orthosis and footwear
3. Conservative foot care management
4. High-risk foot management

Patients with musculoskeletal conditions have an increased need for a range of comprehensive foot care services. Deformities of the foot associated with joint changes and soft tissue lesions create areas of pressure that result in callus and corn formation.7,8 Arthritis in the hands may make foot care and hygiene tasks difficult and spinal involvement can make bending to attend to basic foot care tasks impossible. Therefore, self management foot care aids and skills are beneficial to rheumatoid patients.

Rheumatoid feet have areas which are under high plantar pressure because of prominent metatarsal heads, nodules or bony prominences due to exostoses or instability. Reduction of pathological hyperkeratosis, prescription of suitable footwear and padding can minimize pain by relieving
FOOT CARE IN RA

pressure. It should decrease the vertical pressure and reduce shear, the horizontal movement of the foot within the shoe. Shear and shock absorption are particularly important in patients with rheumatoid arthritis, because they have commonly lost fatty tissue, have hypersensitive skin and inflamed, hypermobile joints.

A custom-made orthosis that is made from an impression of the patient's foot for total contact, aimed to improve the foot function. A study reported a significant reduction in pain and disability by custom-designed orthoses and recommended their early use. Another study also showed that custom moulded orthosis are most effective to reduce foot pain.

The above rheumatoid foot care aimed to protect the foot from skin breakdown, as skin ulcers of rheumatoid arthritic patients are both extreme tender and costly to heal. When skin ulceration occurs, a specialized assessment and multidisciplinary wound care management is needed.

Moreover, exercise modification and physical therapy at different stages of disease are beneficial to the patients. The foot is advised to rest during the inflammatory phases, while later, rehabilitation programs, such as stretching and exercise plans can enhance patient mobility.

However, foot care services to RA patients are generally insufficient. In a study, 42% of the patients presented with active ankle problems, 28% of those presented with forefoot problems, 14% of those complained with both ankle and forefoot problems. However, only 4% patients had treatment on footwear or foot orthotic devices.

In the United Kingdom, only one quarter of those patients who require foot health services have adequate access provided by the NHS services, and between 30 and 40% of people who need access to foot care services simply do not have services available to them from any source, private or public. Due to the limitation in manpower and resources, the insufficiency in foot health provision to patients with rheumatic disorders has been noted by rheumatologists and podiatrists.

Therefore, for better ambulation of RA patients, it is always a good practice to address the highly prevalent foot pathologies promptly and effectively by a comprehensive and specialised multidisciplinary rheumatoid foot care program tailored to the needs of rheumatoid arthritic patients.

References