

Physiotherapy perspective on management of the diabetic foot

Hilary Smith,
Helen Nutland and Vicki Hall
Physiotherapy Department
Queens Hospital Burton-on-Trent



Background

- Involvement in amputee rehab >25 years
- Amputees at all stages, including our weekly satellite Limb Fitting Clinic
- When reviewing our amputees we routinely assessed the contralateral foot, as a high percentage are diabetic/ PVD
- Uncovered numerous problems....

Foot assessment

- When assessing the foot we sometimes found deformities, pressure areas, ulcers which were not being addressed
- Often against a background of peripheral neuropathy, patients sometimes unaware
- We referred on to Podiatry, District Nurses, Orthotics
- We also wondered what part we could play in preventing problems like these

Patient education

- On discussion with the patients, they had often forgotten foot care advice, said they hadn't received any advice, or thought it didn't apply to them!
- Therefore we started to teach basic principles of foot care and advised on footwear
- We wanted to check that we were giving correct information

Liason with Diabetes Clinic

- Diabetes Clinic based at QH Burton; out-patient clinics daily, outreach to wards, BERTIE course for Type 1 diabetes, twice-weekly foot clinics
- Discussion with Dr Willis and the CNS at the Diabetes Centre initiated a closer working relationship (2007)
- We were able to confirm that we were giving appropriate information on foot care to our amputees



But what about the patients who still had two legs and didn't come to amputee rehab/Limb Fitting Clinic?

Integration of Physiotherapy into the Diabetic Foot Clinic (DFC)

- During discussions with MDT, it was suggested that Physios could assist with management of foot ulcers/Charcot by enabling effective “offloading” eg with appropriate walking aids, footwear and resting positions
- Dr Willis and the Lead CNS invited Physio to do 2 clinics per month alongside the Drs, CNS and Podiatrist

Business plan- 2007

- Diabetes Centre agreed to fund Band 4, 8 hours per month at the Diabetic Foot Clinic
- Additional funding for one hour Band 7 per month for supervision/advice
- Initially every other Monday morning, then changed to every Monday between 10-12 to see new patients and follow-ups
- Orthotist joined the MDT shortly after this

Physiotherapy input

- Education on foot care and footwear (thus allowing the Podiatrist to concentrate on direct treatment of ulcers)
- Teaching safe use of walking aids in order to offload problem feet (PWB, NWB)- including steps/stairs
- Advising on adjustments to home environment as necessary
- Teaching exercises to maintain strength, ROM, and promote circulation in lower limbs

Written advice

- We looked at all available literature on foot care, then produced our own advice booklet to 'back up' our verbal advice, including basic exercise examples

Patient Information

from Queen's Hospital - www.burtonhospitals.nhs.uk

Burton Hospitals **NHS**
NHS Foundation Trust

telephone: 01283 566333

Department of Physiotherapy

Looking after your feet when you have Diabetes



Lying on your back or sitting.

Bend and straighten your ankles quickly. If you keep your knees straight during the exercise you will stretch your calf muscles.

Repeat 10 times.



Sitting or lying.
Rotate your ankle. Change directions.

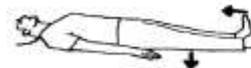
Repeat 10 times each way.



Sit on a chair.

Pull your toes up, tighten your thigh muscle and straighten your knee. Hold approx 5 secs and slowly relax your leg.

Repeat 10 times each leg.



Lying on your back or sitting up on the bed leaning against the pillows, have your legs straight and push one knee at a time firmly down against the bed. Hold 5 secs – relax.

Repeat 10 times each leg.

Further extension of our role

- Liason with Orthotics for protective insoles/footwear
- Referrals to community teams for equipment to assist ADLs/mobility
- Balance and strengthening programmes for those with neuropathy
- More advanced exercise advice for those who are interested, eg. referral to community groups, leisure centres

Example of Intervention

- Mrs P Type 1 Diabetes 37 years
- Presented February with infected ulcer left 5th toe and osteomyelitis, feeling very unwell, fatigued
- Poor balance, poor gait, reduced confidence
- Footwear unsuitable, skincare poor, wearing nylon pop socks
- Using walking stick in right hand
- Mrs P on combination antibiotics
- Heel wedge shoe fitted to offload left forefoot; footwear and foot care advised
- Programme of exercises given to increase circulation and range of movement to left foot
- Progressed to using gym equipment at home
- August -walking daily in normal shoes and doing Karaoke at weekends!



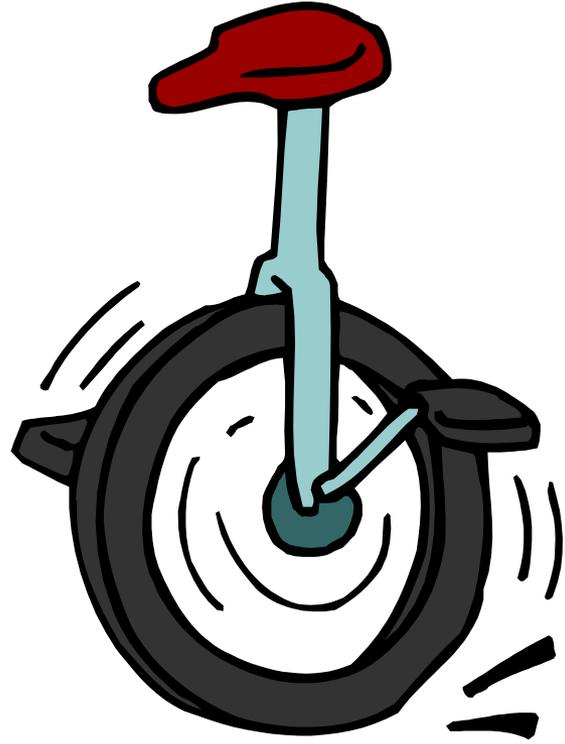
Examples of intervention

- Mr T referred by Dietician in January for weight loss and exercise programme
- Type 2 Diabetes 14 years, BMI 36.5
- He was using walking sticks and a mobility scooter, as his exercise tolerance/ balance/ confidence decreased
- He started an exercise programme to increase range of movement and circulation, progressing to CV exercises including a walking programme. Referred for insoles for adequate foot protection.
- In March Mr T reported that he had been able to walk daily and climb steps without sticks, he had also stopped using his mobility scooter, his confidence had improved, feeling very well
- In April Mr T got married, able to walk a mile a day and balance improved, he was selling his mobility scooter



Examples of Interventions

- Mr C attended clinic November feeling generally unwell, with loss of sensation in right foot
- Ulcers on 3rd and 5th toes right foot
- Needed to reduce weight bearing on right fore foot
- Heel wedge shoe issued along with elbow crutches to allow PWB
- Gait re-education with EC's and forefoot offloading shoe.
- Provided bespoke footwear and foot care advice
- Given exercises to increase circulation and strength
- December Mr C wearing own shoes, using walking stick, ulcers healing well. He was feeling well, posture better, walking improved, he is continuing to use an exercise bike at home daily



Urgent attention

- Gentleman aged 50, type 2 diabetes 5 years
- Known Charcot foot, bilateral
- Arrived at DFC looking quite shocked

- Infected ulcer R foot, osteomyelitis
- MRI indicated gas gangrene





Further examination

- Talus was in his pocket
- Calcaneum was within the foot cavity but unattached
- Disarticulated foot
- Functionally useless
- Starting to heal!



Action taken

- Wound packed and dressed
- Wheelchair had already been issued
- Community OT contacted to do urgent home visit and provide equipment to allow wheelchair living, as wheelchair had not been practical up to this point
- Referred to Vascular Team for amputation
- Explanation, reassurance as able, preparation for surgery

Summary of interventions in one year

- 62 contacts; 22 new patients, 40 follow-ups
- Referrals from Podiatrist (14), Drs (4), CNS (1), Dietician (1), Orthotist (2)
- Foot care advice (20)
- Footwear provided (18)
- Weight-bearing status changed (16)

Interventions continued

- Gait re-education (30)
- Steps/stair education (14)
- Basic exercises taught (22)
- Advanced exercises (4)
- Driving advice (2), work advice (4)
- Referral to community services (7)
- Equipment ordered (2)

Feedback from patients

- We wanted to find out if we were a useful addition to the MDT- patients' perspective
- Difficult to determine effectiveness of Physio intervention alone, as patients usually seen by more than one member of MDT on each visit, and all have input
- Questionnaires give “tick box” answers to questions decided by therapy staff

Storytelling!



Why storytelling?

- Allows patients to elaborate on answers and describe experiences
- Can improve our understanding of the values, beliefs and customs that are important to our patients- they can steer the discussion into areas that concern them
- Interviews were conducted after written consent obtained, fully recorded, answers collated

Examples of questions used to guide the interviews

- Did you have any idea what physiotherapy could offer you prior to your first appointment?
- First impressions- anything that surprised/worried/pleased you?
- Do you recall any advice or help with foot care, footwear or exercise before you saw the Physio?
- Is there anything that you do differently since you saw the Physio?

Further questions...

- How did you feel about seeing different members of the team on the same day?
- How easy was it to ask questions?
- Did you feel that you had enough privacy?
- Is there anything else you would like to add?

Participants

- Gentleman aged 67, referred by Podiatrist, presented with Charcot foot. Given aircast boot, needed education on safe use of e/crutches, offloading, foot care
- Lady aged 63, referred by Dietician, needed footcare advice and individual advice on exercise (RA, recent TKR, high BMI)
- Gentleman aged 60, referred by Dr, presented with neuropathic ulcers both feet. Needed protective footwear, foot care advice, exercises and offloading with e/crutches

Some responses

- 2/3 had no idea what Physio could offer, but “PTAP was thorough about home situation, how he would cope on crutches”
- “PTAP understood that she could not jump through hoops”
- “PTAP asked how he would cope at home while his foot was bad- he hadn’t thought about this before- PTAP arranged for council to put his bin out!”

Responses.....

- “had advice on foot care before but useful to have it repeated”
- “no written advice before the Physio appt, had been to Orthotist but they didn’t deal with this”
- “could not recall being given advice before, more casual approach at local health centre”

Responses.....

- “Physio offered advice that he hadn’t thought about, eg managing on steps”
- “in general, the Physio is very helpful in the clinic, understanding and offers practical advice”
- “Useful to see all MDT on same morning, saves time”

Closing the loop

- DFC now staffed by Band 5 rotational Physio, following training by PTAP/ Band 7
- Band 5 Physio also sees patients on our wards who are admitted with foot problems; treatment is co-ordinated, MDTs informed, patients followed up by same team led by Dr Willis; Podiatrist does an in-patient ward round every week

Foot care pathway

- Guidance only
- Advice from Dr and/or Podiatrist wherever possible
- Guideline drawn up following visit to vascular ward at Coventry and Warwickshire NHS Trust, developed from a flow chart that they were using
- Checked and agreed with our Orthopaedic foot Specialist, Podiatrist, TVN

GUIDELINE FOR MOBILITY

<p>Toe ulcer, toe amputation</p> <p>↓</p> <p>Full WB</p> <p>↓</p> <p><u>Post operative sandal.</u></p> <p>May require orthotic wedge sandal, toe offloaded- if this is issued check balance and gait with appropriate walking aids.</p>	<p>Heel ulcer</p> <p>↓</p> <p>Full WB</p> <p>↓</p> <p>May require orthotic wedge sandal, heel offloaded- if this is issued check balance and gait with appropriate walking aids.</p>	<p>Toe amputation with metatarsal involvement</p> <p>↓</p> <p>Heel WB</p> <p>↓</p> <p><u>Post operative sandal</u> or orthotic wedge sandal, forefoot offloaded. If a wedge sandal is used check balance and gait with appropriate walking aids.</p> <p>↓</p> <p>Follow up in orthotics for long term footwear</p>	<p>Forefoot amputation, plantar debridement, acute Charcot, acute osteomyelitis</p> <p>↓</p> <p>Non WB</p> <p>↓</p> <p>Transfers only or supply <u>Aircast</u> boot or PTBO via orthotics. Minimise hopping.</p> <p>↓</p> <p>OT referral, <u>?</u> wheelchair</p> <p>↓</p> <p>Follow up in orthotics or Prosthetics for long term footwear</p>
---	--	--	--

Additional benefits

- If all else fails, and amputation is advised:
 - ✓ The patient already knows the Physio team
 - ✓ The Physios know the patient, and the home circumstances
 - ✓ They have been doing exercises to maintain ROM/strength
 - ✓ The Vascular 'hub' hospital (UHNS) can be informed if a complicated discharge is anticipated, so a rehab bed can be pre-arranged

Thank you

- any questions?