

# Charcot Foot



Pradeep Solanki  
Podiatry Team Leader, Diabetes  
Specialist Podiatrist

Croydon Health Services NHS Trust

Christian Pankhurst  
Clinical Specialist Orthotist

Guy's and St. Thomas' NHS Foundation Trust and  
King's College Hospital



**Croydon Health Services**  
NHS Trust



**King's College Hospital**  
NHS Foundation Trust



**Guy's and St Thomas'**  
NHS Foundation Trust

# Charcot Foot

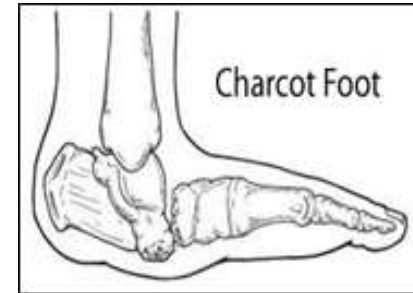
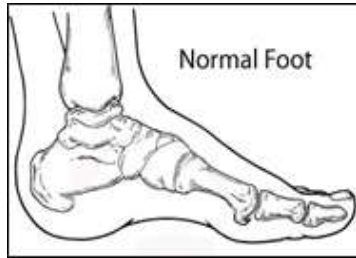
- **Learning Outcomes**
- **Understand the definition of a Charcot Foot**
- **What leads to a diagnosis of Charcot**
- **Understand what makes the foot in diabetes so vulnerable to developing Charcot Osteoarthropathy**
- **Key tips to share with patients to prevent the development of a Charcot**
- **Understand the impact a Charcot has on a patient / clinical outcomes**
- **Be aware of what treatments are available for Charcot**
- **When to refer on and how you would find out to whom to refer to**

# Aim

- Introduce the Charcot foot syndrome
- Look at the presentation of the condition
- Explore short and long term treatment goals
- Enable you to feel more confident in spotting a Charcot and what to do

# Definition

- Osteoarthropathy -Neuro arthropathy - Foot Syndrome
- Affects people with dense sensory neuropathy
- And also neuro-ischaemia (e.g the renal patient)
- Characterised by oedema, inflammation, heat, change in foot shape- deformity, bone fractures, deep ache/pain




# Clinical Presentation

A Charcot deformity in a neuroischaemic foot renal patient



 Pedal artery calcification

 Mid foot bones affected subluxing

# Other causes..

Uncommon condition that is associated with the neuropathic condition now mostly diabetes.

The prevalence appears to be underestimated- due to a lack of awareness of the condition- reports vary 3 per 1000 up to 7.4 per 1000 (Hispanic population)

Charcot also seen in: Tertiary syphilis- tabes Dorsalis (neuro syphilis),  
Alcoholism  
Hanson disease (Leprosy).  
& mainly... Diabetes mellitus



The actual cause is poorly understood:

- In susceptible Person – where there is established **sensory neuropathy** possible minor trauma event.
- Sensory neuropathy (reduction or absence of the gift of pain) , could mean that patient **continues to weight bear** on foot despite some bony changes, where normally pain would be a limiting factor...
- An episode of inflammation in the foot becomes protracted (due to the neuropathy, Immune mediated process involving **cytokines** that promote **bone destruction** by the activation of osteocytes).
- Bone density reduces, resulting in bone architecture becoming **osteopenic**, bony fractures, dislocation, deformity
- Very destructive process that can progress quickly... requires early referral and review..
- **NB not just restricted to the neuropathic foot.. Also the 'renal foot'**

# Differential diagnosis

- DVT
- Osteomyelitis
- Proximal blockage
- Bone tumour
- Other fracture



# Phases of the Charcot foot syndrome

- i)The active acute destructive phase
- ii)The consolidation remodelling phase
- iii)The quiescent phase

# Management: Acute destructive Phase

If you suspect a Charcot- refer immediately to your local specialist Multi Disciplinary clinic  
(know who to contact!)

Need to establish a diagnosis: Take a history, Plain film x ray, exclude Osteomyelitis, DVT, gout, infection from another source, ankle sprain, Possible use of Mri imaging, blood tests maybe required.

Inform the patient of the suspected condition the potential risks

Immobilise the foot and ankle as quickly as possible. Pt may need walking aids.

Characterised by

- Oedema,
- Redness
- Swelling
- Pain (in an otherwise relatively insensate foot)



# Management: Acute destructive Phase

- Immobilise, and educate your patients and their families
- Gold standard is a total contact cast TCC- a non removable cast



- If not able to use a TCC, a walker boot with a tie (iTCC)- or removable



Rigid ankle/foot, high up the leg for leverage and weight redistribution, rocker sole for off loading, can be rendered non removable



# Walking in a total contact cast



## Management: Acute destructive Phase

- Change the TCC frequently initially the swelling should go down, then change weekly.
- Take serial plain film x rays to review for interval changes
- MRI may be helpful to review the oedema
- Monitor the temperature of the affected foot- (like it to be with in 2 Celsius of the other foot).
- Once all these indicators have stabilised can assume foot is in the
- Next stage.... The remodelling coalescence phase

# The remodelling/ coalescence phase

The foot inflammatory/destructive stage has stopped

The bones now begin to re solidify in the new shape- hopefully foot shape has been preserved relatively well.

Continue to immobilise, refer for surgery or footwear, or an orthotic.

Monitor closely for flare ups, or starting up in the other foot.

The foot may change shape a little further- Photography is helpful.



The MDT may refer for surgical opinion if foot deformity is severe



## Surgical intervention



- Aim to maintain a plantigrade foot
  - To try to avoid foot ulceration
  - Help footwear fitting
  - Facilitate ambulation
  - Limb salvage
- (Not sure how long the metal work lasts for)

# Phases re cap



No set time frame to next stage



## **Destructive phase**

Inflammation, Bones weakened  
Fractures, change in shape  
Possible ulceration

## **Remodelling phase**

Inflammation settles down  
Temperature of feet within 2°C  
Bones coalescing together  
Foot in new shape



# Quiescent phase

- Foot is settled,
- Plain film X-Ray and or MRI indicates no inflammation, no bone oedema
- Foot temperature settled no further change in shape of foot.
- Slow increase in ambulation
- Footwear

# Foot protection is important



Footwear to protect the feet.  
Accommodate the foot shape  
Rigid outer sole  
Rocker sole  
Wear as much as possible indoors and outdoors

# Thank you

[psolanki1@nhs.net](mailto:psolanki1@nhs.net)

[christian.pankhurst@nhs.net](mailto:christian.pankhurst@nhs.net)

- [www.footindiabetes.org.uk](http://www.footindiabetes.org.uk)
- [www.londonscn.nhs.uk](http://www.londonscn.nhs.uk)
- [www.bapo.com](http://www.bapo.com)

# Thank you for listening

- Any questions