Summer SCHOOL 2025

A residential learning experience

14-15 February 2025

Novotel Geelong, VIC

Acute Charcot neuro-osteoarthropathy (CN): Assessment, Diagnosis and Management.

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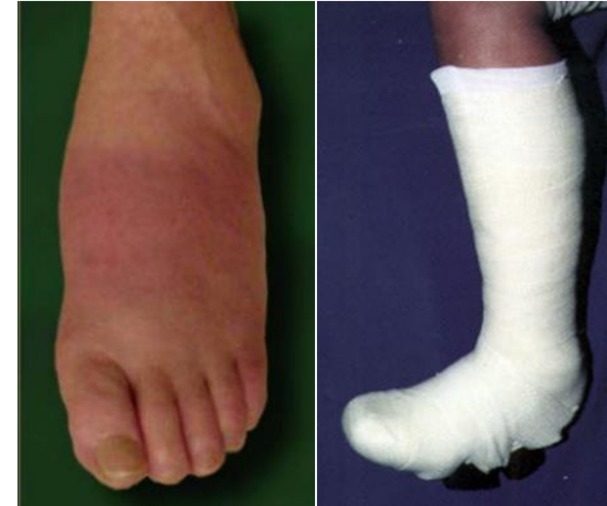
What is Charcot neuro-osteoarthropathy

- Charcot neuro-osteoarthopathy (CN) presents as a medical emergency:
  - Redness, swelling, heat
  - Joint dislocations and subluxations
  - Usually unilateral
  - Imminent structural collapse
  - Potential skin breakdown, infection, lower limb amputation



http://www.aafp.org/afp/980600ap/caputo.html

- Total contact casting (TCC) recommended as gold standard for immediate early offloading and immobilisation.

(IWGDF, 2023)

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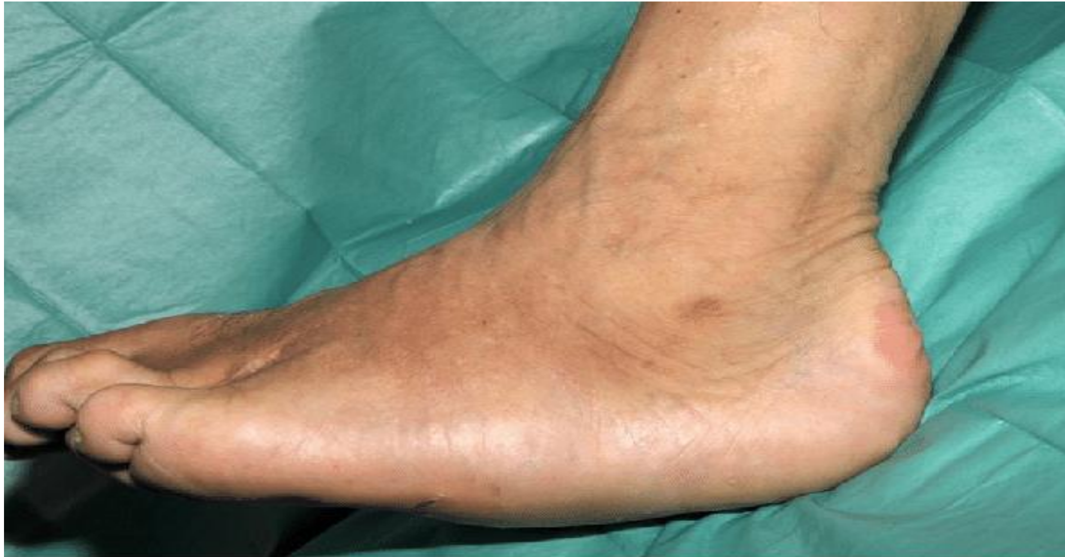
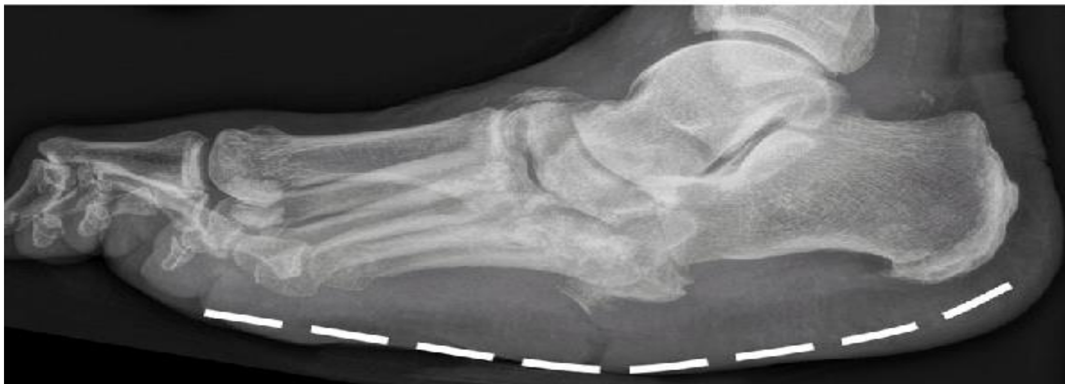
What happens to the foot?

(Rosskopf & Pfirrman, 2019)

- Osteopenia, fragmentation, joint subluxation and dislocation.
- Absorption of loose debris, sclerosis fusion of larger fragments.
- Consolidation of deformity, arthrosis, fibrous ankyloses, rounding and smoothing of bone fragments.

(Kavitha et al., 2009)

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REVIEW Open Access

1 Factors impacting the evidence-based assessment, diagnosis and management of Acute Charcot Neuroarthropathy: a systematic review

D. Diacogiorgis[1,2], B. M. Perrin[2,3*] and M. I. C. Kingsley[3,4]

2

AJRH The Australian Journal of Rural Health

ORIGINAL RESEARCH | Open Access

Assessment, diagnosis and management characteristics of people with acute Charcot neuro-osteoarthropathy in a regional Australian health service: A 3-year retrospective audit

Dimitri Diacogiorgis MApplSc, Byron Matthew Perrin PhD, Michael Ian Charles Kingsley PhD

3 The enablers and barriers to delivering evidence based assessment, diagnosis and management of people with acute Charcot Neuro-osteoarthropathy (CN) attending a regional Victorian health service.

4 A resource to guide health professionals in the delivery of evidence based assessment, diagnosis and management of people with acute Charcot-Neuro-osteroarthropathy (CN) in a regional Australian setting.

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Aims and Methodology

Aim:

To determine the characteristics of the assessment, diagnosis and management of people with acute CN attending a large regional Australian health service.

Design

Three-year retrospective cohort study.

Setting

Large regional health service with catchment >250000 people in regional Australia.

Participants

People with acute CN who attended emergency, orthopaedic clinics or High Risk Foot Clinic (HRFC).

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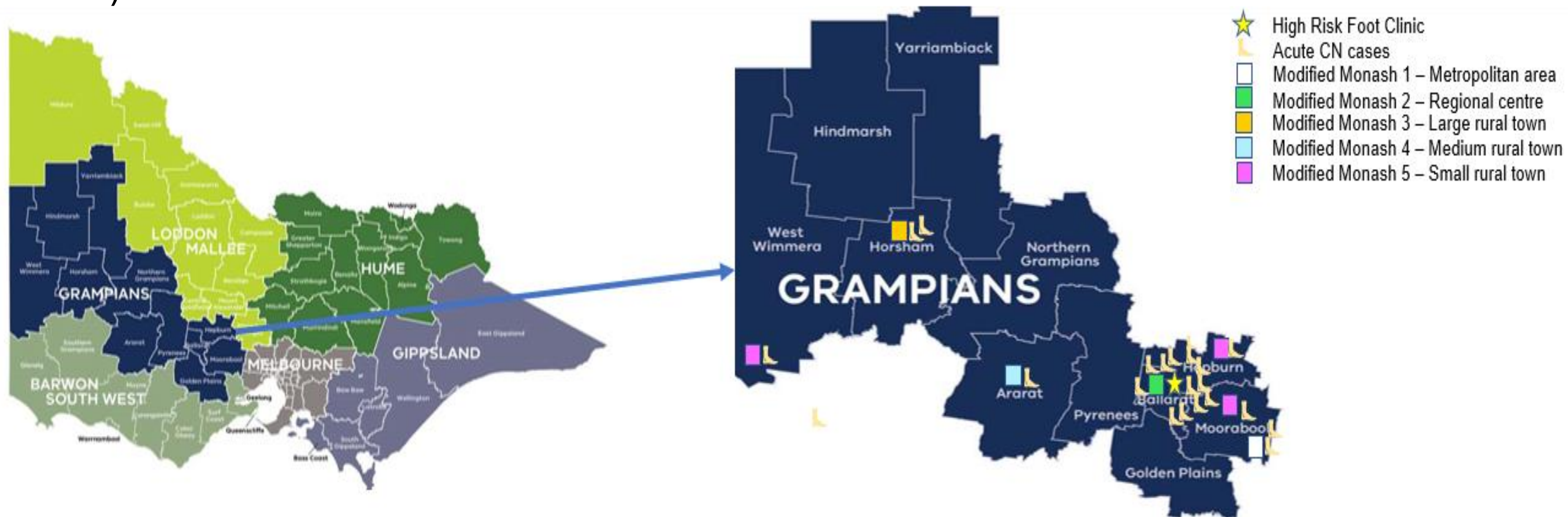
Results

- Median duration to seek help was 31 (IQR 14-47) days.
- Mean 433 days acute CN management following diagnosis.
- Those who resided in MMM1-2 regions experienced significantly shorter time to TCC therapy compared to those residing in MMM3-7 regions (U=3.0, $p<0.01$).



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Regional/rural disparities acute CN care

- Those in MMM>2 waited close to a month for gold standard TCC therapy.
- Median length of treatment with a TCC longer in this study than a metropolitan study.
  (Griffiths & Kaminski, 2021)
- Proximity to services and competency, credentialing and capacity of health professionals leading to increased days acute CN management following diagnosis.
  - Longer than suggested in Australian systematic review (2-12 months).
    (Milne et al., 2013)
  - International audit suggested 9 months acute CN management if access to TCC therapy immediate.
    (Game et al, 2012)

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Delays in seeking help

Awareness	Awareness of symptoms is a significant issue particularly in the context of underlying diabetes and associated peripheral neuropathy. (Schmidt & Holmes 2018; Schaper et al, 2024)
Diabetes	Diabetes is a demanding condition with competing priorities. (Pouwer et al., 2024)
Access to care	Compounded by geographical isolation, travel requirements, cultural sensitivity and the availability of skilled clinicians. (Tehan et al, 2024)

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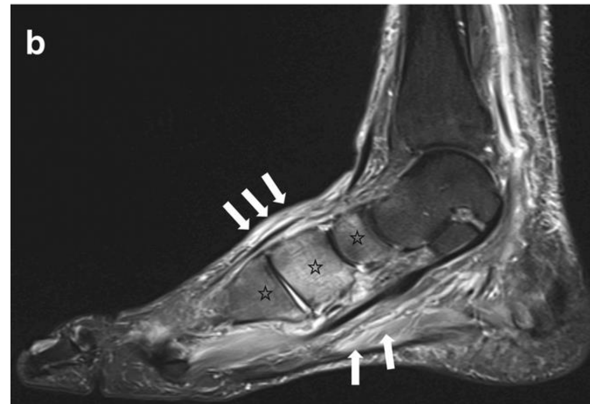
Delays in diagnosis

- Misunderstanding and acute CN misdiagnosis has been demonstrated in other studies.
  (Game et al, 2012; Gooday et al., 2020)

- A metropolitan Melbourne study reported a 2 month lapse between onset of acute CN and diagnosis with a misdiagnosis rate of 63%.
  (Griffiths et al, 2021)

- Proximity to services and availability of skilled clinicians in regional or rural settings important.
  (Blume et al, 2014; Welch et al, 2014)



(Rosskopf & Pfirrman, 2019)

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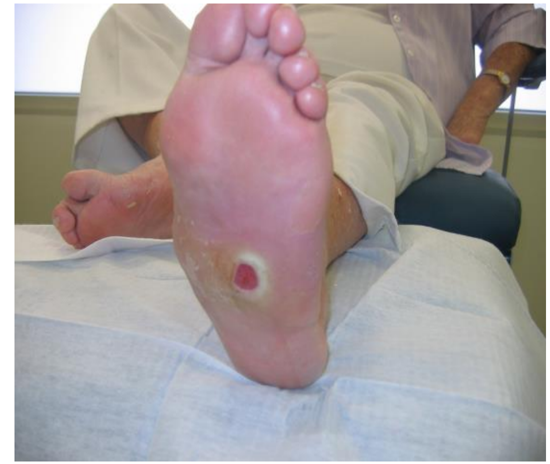
Implications for practice and research



- Awareness campaigns for patients and their families/ carers.
- Training for health professionals.
- Clinical pathways of escalation and de-escalation of care.
- Further research that includes the perceptions of people with acute CN and health professionals.

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What do I do if a patient presents with a swollen foot?

- Patient story.
- Medical history and medications (including those recently ceased).
- Skin surveillance – look for breaches of skin integrity – wound presence?
- Neuro-vascular foot assessment – bounding pulses? Absent protective sensation?
- Temperature comparison.

Do you suspect acute CN?.

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I suspect acute CN

- Send for weightbearing imaging – X-ray?
- Commence offloading available to you in your clinic.
- Refer to a service that provides TCC – e.g Information through Western PHN.
- Waiting for diagnosis/ at time of diagnosis:
  - Educate patient what acute CN is/ potential treatment process.
  - Determine needs of patient – home equipment, mobility, transport, nursing etc.
- Throughout the process maintain the connection with the patient through regular review in conjunction with multidisciplinary treating team.

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Thankyou

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