Peripheral Neuropathy

Disclaimer

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Red Flags

- Rapidly progressive neurological symptoms leading to weakness or imbalance
Background

About peripheral neuropathy

About peripheral neuropathy

Patients can present with altered sensation, pain, weakness, or autonomic symptoms. Most are chronic and symmetrical. If asymmetrical, consider mononeuritis multiplex or a vasculitic process.

Acute onset or rapid progression is uncommon and suggests Guillain-Barré syndrome, vasculitis, or toxins, and usually needs acute admission.

Types:
- Sensory
- Autonomic
- Mixed sensori-motor

Assessment

1. Take a history of onset, **symptoms, pain**, any chronic conditions, exposure to medications, toxins and alcohol.

   **Painful neuropathy**
   - Often described as constant burning, paraesthesia, episodic shooting or electric pains.
   - Occurs in a region with disturbed sensory and/or motor function.
   - Includes:
     - hyperalgesia (increased sensitivity to pain)
     - allodynia (pain from non-painful sensory stimuli)
     - hyperpathia (increased severity or area of pain with repeated stimuli, e.g. repetitive pinprick).
   - May spread outside normal nerve distribution.

2. Look for **possible causes**, especially treatable ones. Consider carpal tunnel syndrome for neuropathy symptoms in the hand.

**Symptoms**

- **Sensory**
  - Feet are usually affected first.
  - Paraesthesiae, numbness, burning pain, and loss of vibration and position sense are prominent.
  - May get muscle wasting.
  - May have ataxia caused by loss of position sense.

- **Motor**
  - May be associated motor symptoms.
If no sensory component, and only motor, consider muscular dystrophy, myastenia, myopathy.

- **Autonomic**
  - Constipation, loss of bowel or bladder control and orthostatic hypotension.
  - Skin may be dry and sweating may be reduced.

*Painful types are usually associated with alcohol dependence, diabetes, porphyria, vitamin B1 or B12 deficiency, vitamin B6 toxicity, or amyloidosis.*

### Possible causes

**Commonly seen:**
- Physical trauma
- Diabetes
- Alcohol dependence
- Peripheral vascular disease
- Idiopathic
- Vitamin deficiency: B12, B6, B1

**Rarer causes:**
- Inflammatory or auto-immune, e.g. collagen vascular diseases, sarcoidosis
- Chronic inflammatory demyelinating polyneuropathy (CIDP) and paraprotein-related demyelinating neuropathies
- Agricultural and industrial exposures to chemicals, heavy metals, pesticides, poisons

A cause is often not found, but may be hereditary (approximately 20%).

- Most common are diabetes, vitamin B12 deficiency and alcohol excess.
- A cause is often not found, but may be hereditary (approximately 20%).

3. Perform neurological examination:
   - Look for motor and sensory findings which are distal in the limbs and symmetrical.
   - Sensory loss is usually a "glove and stocking" distal distribution.
   - Motor loss is usually weakness around the ankles and/or loss of ankle reflexes.

4. Eliminate peripheral vascular disease as a cause of symptoms.

5. Arrange initial investigations:
   - Urine for protein, including Bence-Jones protein.
   - **Bloods.**

**Bloods**

*First-line tests:*
- FBE
- CRP
- ESR
➢ Vitamin B12, B1
➢ Folate
➢ Fasting blood glucose (FBG)
➢ Electrolytes, urea, and creatinine
➢ LFT
➢ Thyroid function tests

Second-line tests:
➢ Antinuclear antibody (ANA) and extractable nuclear antigen antibodies (ENA)
➢ Serum protein electrophoresis (SPE)

For agricultural or industrial workers:
➢ Red cell and plasma cholinesterase levels
➢ Lead, arsenic, thallium, selenium, zinc

6. Arrange **nerve conduction studies** for all suspected neuropathies except transient symptoms due to physical injury, e.g. classic Saturday night palsy.

### Nerve conduction studies

- **May distinguish type without need for neurologist opinion.**
- **May distinguish focal nerve damage (e.g. carpal tunnel syndrome) from peripheral neuropathy if clinical doubt.**
- **Can be a guide to the type of peripheral neuropathy e.g. sensory or motor.**
- **Helps determine potential causes and treatments.**

### Management

1. If acute or rapidly progressive neuropathy (e.g. Guillain-Barré Syndrome) arrange **immediate neurology referral or admission.**
2. Arrange **urgent or routine neurology referral** for symptoms that present over weeks to months, including:
   - focal neuropathy
   - suspected peripheral neuropathy
   - persistent, unexplained sensory symptoms.
3. Treat any underlying cause.
4. Avoid neurotoxic drugs (e.g. nitrofurantoin).
5. Painful neuropathy is difficult to treat. Consider **neuropathic agents.**

#### Neuropathic agents

- **First-line – tricyclic antidepressant (TCA):**
  - **Amitriptyline/nortriptyline. Start 10 mg at night and increase slowly with weekly increments up to 50 mg at night.**
  - **Duloxetine. Start 30 mg daily. Slowly increase to maximum 60 mg twice daily.**

  *Duloxetine is effective, but PBS Restricted Benefit for depression only.*
➢ Second-line – anticonvulsants:
  o Gabapentin. Start 300 mg three times daily and increase slowly if needed to 600 mg three times daily, or
  o Pregabalin. Start 25 to 75 mg twice daily and increase slowly if needed to 300 mg twice daily.

Gabapentin and pregabalin are both PBS authority for refractory neuropathic pain, and have similar efficacy. Titrate dose according to the effect and allow 7 days between increments. There is little evidence for sodium valproate and carbamazepine, despite being used in this context. Adverse effects often limit the use of these drugs.

➢ Combination of a TCA and an anticonvulsant is more effective than either alone.

➢ Topical treatments are of limited value and best reserved for very focal pain (e.g. postherpetic). Lignocaine 5% ointment (or 10% gel as extemporaneous preparation) may be useful.

6. Advise patients about prevention of injury to affected limbs.

**Prevention of injury**

Advise patients on:

➢ wearing sensible footwear to protect feet
➢ visually inspecting feet
➢ seeking treatment early
➢ regular foot care
➢ weight reduction

*May need walking aids if severe leg weakness. If increasing disability consider requesting occupational therapy assessment, physiotherapy assessment, or podiatry assessment for foot care if unable to self-care or complications.*

*Patients may be eligible for Chronic Disease Management Item and referrals to Allied Health.*

7. If aged > 65 years with co-morbidities, request aged care assessment.

8. In diabetes, ensure optimal diabetes control and correct diabetic foot management.

9. If symptoms are adversely affecting mobility, arrange a falls assessment.

10. Watch for problems related to loss of independence and disability, e.g. depression.

**Referral**

- If acute or rapidly progressive neuropathy (e.g. Guillain-Barré Syndrome) arrange immediate neurology referral or admission.
- Arrange urgent or routine neurology referral for symptoms that present over weeks to months, including:
  - focal neuropathy
  - suspected peripheral neuropathy
• persistent, unexplained sensory symptoms.
• If aged > 65 years with co-morbidities, request aged care assessment.
• Consider referral to physiotherapy or occupational therapy to help reduce falls risk, discuss mobility aids, or home modifications.
• If symptoms are adversely affecting mobility, arrange a falls assessment.
• If diabetic neuropathy, consider podiatrist assessment or referral to a high risk foot clinic.

For health professionals

Further information
Australian Family Physician:
• Paraesthesia and Peripheral Neuropathy
• Neuropathic Pain: A Management Update

For patients

healthdirect – Peripheral Neuropathy

References

Select bibliography

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