Managing Neuropathy after Transplant

Celebrating a Second Chance at Life Survivorship Symposium

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What you need to know about chemotherapy-induced peripheral neuropathy (CIPN)

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Disclosures

• None
Overview

- Define chemotherapy-induced peripheral neuropathy
- Review risk factors, prevalence and common culprits
- Discuss symptoms
- Review treatment strategies
What is neuropathy?

• Damage or dysfunction of peripheral nerves
• Nerves control sensation, movement, and “autonomics”
How common is neuropathy after chemotherapy?

- At the end of one month: 68.1%
- At the end of 3 months: 60%
- At the end of 6 months: 30%

Risk Factors

- Baseline neuropathy
- Age
- Smoking history
- Decreased creatinine clearance
- Sensory changes during chemotherapy


Symptoms

- Acute or Slowly Progressive
- Why are sensory nerves more affected than motor nerves?
  - Cell bodies located in DRG, which is outside of the blood-brain barrier
Symptom profile

- **Positive and/or Negative symptoms**
- **Positive**
  - Pain (shock, burn, stab, lancing)
  - Dysesthesia, hypersensitivity
  - Tingling
  - Pruritis, cramping
- **Negative**
  - Numbness
  - Impaired proprioception/balance
  - Weakness including foot drop
Detecting neuropathy

- History
  - Symptoms
  - Functional status
  - Comorbidities
  - Family history
- Exam – check motor, sensory, balance, gait
- NCS/EMG

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Diagnosing CIPN

• Diagnosis of **exclusion** - make sure you are not missing:
  • Diabetes
  • Vitamin deficiencies or toxicities
  • Thyroid issues
  • Less common things
Which drugs cause neuropathy?

- Vincristine
- Platinum agents
- Bortezomib
- Thalidomide
- Taxoids (i.e. Taxol/docetaxel)
- Suramin
- Others
Who manages neuropathy?

- Physiatry
  - Otherwise known as Physical Medicine and Rehabilitation Specialists
- Neurology/neuro-oncology
Why care about neuropathy?

- Almost **70%** of patients experienced neuropathy **one month** after chemotherapy.

- **6 months** after completing chemotherapy, **30%** of patients reported ongoing neuropathy.

Why care about neuropathy?

• Quality of life
• Function
• Safety
Why care about CIPN?

• Quality of life

  – Patients who have neuropathy from chemotherapy report **worse** quality of life

  – **More** symptoms of neuropathy = **worse** quality of life

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Why care about CIPN?

• Function
  – Worse performance on functional tests
  – Walking slower = increased fall risk
  – Reduced independence with activities of daily living

Why care about CIPN?

• **Safety**
  
  – Approximately **17%** of patients with neuropathy from chemotherapy fall

  – **Increased** odds of falling by 1.8 – 3x

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Who falls with CIPN?

- Almost 12% in 3 months
- Impaired proprioception, gait, foot drop
- Higher cumulative chemo dose
- Higher number of neuropathic symptoms and CIPN scale scores
- Motor>Sensory symptoms
- 27% reported functional impairment

Any prevention techniques?

• Short answer - no

• Amifostine
  – FDA approved to reduce chemotherapy toxicity
  – **Limited evidence** that it helps

• Vitamin E
  – The jury is out.

• Others being investigated
  
  
How can you treat neuropathy?

• Dose reduction or decreased frequency of chemotherapy

• If there is a contributing cause, treat it
How can you treat neuropathy?

- **Medications:**
  - Duloxetine, venlafaxine, amitriptyline, nortriptyline
  - Gabapentin, pregabalin
  - Topicals such as capsaicin, lidocaine or mix of baclofen, amitriptyline and ketamine

CIPN: Treatment

- **Exercise**
  - Helps symptoms
  - Improve QOL and ADL independence

- During chemotherapy administration, those who exercised experienced **symptoms less commonly** and also **less severe symptoms** compared to those who did not exercise

Exercise guidelines for cancer survivors

• Guidelines published by the American College of Sports Medicine in 2010:

  • Participate in at least **150 minutes** of moderate intensity aerobic exercise per week

  • Include **strengthening and flexibility** exercises
Updates from 2019

• Moderate to vigorous activity reduces cancer risk

• Frequency: 150-300 minutes per week

• Prescription recommendation:
  • Moderate-intensity aerobic and/or resistance exercise
  • At least 3 times per week
  • At least 30 minutes

General exercise prescription

• **Aerobic exercise training:**
  • 150 minutes of moderate-intensity exercise or 75 minutes of vigorous-intensity exercise per week

• **Strength training:**
  • 2-3 sessions per week for major muscle groups

• **Flexibility:**
  • Stretch major muscle groups and tendons on days that other exercises are performed

Schmitz 2010
But…

• Before you start exercising, you should be **screened** by a physician

• Why?
  
  • Prevent injury
  
  • Tailor your exercise program to achieve your goals

Schmitz 2010
CIPN: Rehab interventions

• Start with static standing, then add simple manipulation, then walking, then manipulation while walking
• Work on gait training and LE strengthening and proprioception


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CIPN: Rehab interventions

• Hand therapy through a specially trained occupational therapist can also be helpful to focus on:
  – Strengthening fine motor
  – Neuromuscular re-education
  – Adaptive equipment

CIPN: Rehab interventions

- Desensitization and TENS
- Laser therapy (photobiomodulation)
- Scrambler therapy being actively researched
- Can trial AFOs for foot drop or proprioception
- Ambulatory aids
- Compression socks, wool socks
- Trial acupuncture
- Skin checks

QUESTIONS?
Questions?

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