

# NEUROPATHY

## NERVE DAMAGE

A chronic and disabling illness with unpredictable pain, reduced mobility and/or independence.



# PERIPHERAL NEUROPATHY

Peripheral neuropathy is a disorder of the peripheral nerves.

The motor, sensory and autonomic nerves that connect the spinal cord to muscles, skin and internal organs.

# OCCURENCE

- ◆ 8% of the world population
- ◆ 15-20% of cancer patients have neuropathic pain
- ◆ more than 50% of diabetics will have neuropathic pain
- ◆ 1 in 15 people in Canada live with Neuropathy
- ◆ 0-20 yrs = 3%      30-40 yrs = 27%
- ◆ 50-60 yrs = 55%      70-80 yrs = 15%
- ◆ Leprosy is the #1 cause in developing countries

# TYPES OF NEUROPATHY

- ◆ Autonomic
- ◆ Cancer related
- ◆ Compressive
- ◆ Hereditary
- ◆ Diabetic
- ◆ Drug induced and Toxic
- ◆ G.I. and Nutrition
- ◆ Immune mediated and CIDP
- ◆ Infectious
- ◆ Neuropathic Pain
- ◆ Idiopathic

# AUTONOMIC

- ◆ Orthostatic Hypotension (low blood pressure upon standing)
- ◆ Autonomic dysfunction of the gastrointestinal tract (stomach and bowel)
- ◆ Peripheral autonomic dysfunction of the urinary bladder

# CANCER RELATED

- ◆ Toxic neuropathy caused by chemotherapy agents
- ◆ Tumor cells can directly infiltrate or compress the peripheral nerves
- ◆ Immune reaction to a protein present in both tumor cells and the peripheral nerves

# COMPRESSIVE

- ◆ Often referred to as Mono-neuropathy
- ◆ Usually caused by trauma, local compression or inflammation
- ◆ Carpal tunnel
- ◆ Bell's Palsy
- ◆ Sciatica
- ◆ Angulation and stretch injuries
- ◆ Thoracic outlet syndrome

# DIABETIC

- ◆ Occurs in both Type I and Type II
- ◆ At least 50% of people with diabetes live with some form of neuropathy





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# DRUG INDUCED AND TOXIC

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- ◆ Industrial agents
- ◆ Medications
- ◆ Toxins

# G.I. and NUTRITION

- Results from nutritional deficiencies
- Alcoholism
- Resection/bypass surgery
- Crohn's disease
- Celiac disease
- Inflammatory bowel disease



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# HEREDITARY

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- ◆ Charcot-Marie-Tooth
- ◆ Familial Amyloidotic Neuropathy
- ◆ Hereditary Porphyria

# IMMUNE-MEDIATED

- ◆ Guillain Barre Syndrome
- ◆ Vasculitic
- ◆ Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)

# INFECTIOUS DISEASES

- ◆ Human Immunodeficiency Virus (HIV) infection
- ◆ Lyme disease
- ◆ Leprosy
- ◆ Herpes zoster neuropathy (shingles and post-herpetic neuralgia)
- ◆ Hepatitis C
- ◆ Herpes simplex neuritis
- ◆ Diphtheric neuritis
- ◆ Chagas' disease

# NEUROPATHIC PAIN

- ◆ Nerve itself is the source of the pain.
- ◆ Result of injury, stroke, disease or congenital conditions involving the brain and/or spinal cord
- ◆ Nerve injury (often post-surgical)  
Complex Regional Pain Syndrome (CRPS)

aka Reflex Sympathetic Dystrophy (RSD)



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# IDIOPATHIC

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- ◆ 30% of all neuropathies do not have a clinical diagnosis as to cause.

# DIAGNOSIS

- ◆ History
- ◆ Family history
- ◆ EMG - determines if it's axonal or demyelinating, determines rate of conduction
- ◆ Lab work - metabolic, nutritional, toxic, Ca, rheumatologic, etc.
- ◆ Quantitative Sensory testing
- ◆ Skin biopsy



# SIGNS & SYMPTOMS

- ◆ Sensory Nerves: affect sensation
- ◆ Motor Nerves: affect muscles
- ◆ Autonomic Nerves: affect internal organ function
- ◆ Sensations are usually worse at night, and sometimes become extremely painful and severe.

# SENSORY NERVES

- ◆ Paresthesia: Spontaneous sensations – pain, numbness, tingling, cramping, itching, electric shock, pinching, weakness, loss of balance, irregular gait
- ◆ Dysesthesia: Abnormal sensations when you touch something – burning, freezing losing your balance.
- ◆ Anesthesia: Feeling nothing at all

# MOTOR NERVES

- ◆ Muscle cramps
- ◆ Weakness
- ◆ Imbalance
- ◆ Poor coordination (gait)
- ◆ Decrease reflexes

# AUTONOMIC NERVES

- ◆ Syncope
- ◆ Vision
- ◆ Bowel/bladder
- ◆ Sweating
- ◆ GI disturbance (stasis-lack of motility, pain, vomiting, disabling, weight loss)
- ◆ Cardiac (autoimmune) impaired control of heart rate and blood pressure, light headedness, fatigue, palpitations
- ◆ Sexual dysfunction

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# ADDITIONAL SYMPTOMS

- ◆ Emotional symptoms
- ◆ Mood dysfunction
- ◆ Depression
- ◆ Anxiety
- ◆ Sleep Dysfunction: RLS, pain, sleep apnea, insomnia
- ◆ Cognitive Concerns – confusion, slow processing
- ◆ Medication side effects: nausea, dizzy, sleepy, weight gain, edema, addiction, tolerance, constipation

# TREATMENTS

## GOAL

To: maintain, regain function and quality of life

- ◆ Analgesics
- ◆ Anticonvulsant (anti-seizure)
- ◆ Antidepressant
- ◆ Topical
- ◆ CIDP specific
- ◆ CAM (Complimentary/Alternative Medicine)

# ANALGESICS

- ◆ Opioids: Oxycodone (Oxycontin), Tramadol
- ◆ Fentanyl (Duragesic Transdermal System)
- ◆ Methadone
- ◆ NSAIDS, Ibuprofen, Aleve, Acetaminophen



# ANTICONVULSANTS

- ◆ Gabapentin (Neurontin)
- ◆ Pregabalin (Lyrica)
- ◆ Oxacarbazine (Trileptal)
- ◆ Topiramate (Topomax)
- ◆ Lamotrigine (Lamictal)

# ANTIDEPRESSENTS

- ◆ Duloxetine (Cymbalta)
- ◆ Amitriptyline (Elavil)
- ◆ Nortriptyline (Pamelor)
- ◆ Venlafaxine (Effexor)



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# TOPICAL

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- ◆ Lidocaine patch
- ◆ Capsaicin (Zostrix)

# CIDP specific treatment

- ◆ **IVIg – Intravenous Gammaglobulin** (prevent the immune system from attacking nerves)
- ◆ **Plasma Exchange** (removes the antibodies from circulation that attack nerves)
- ◆ **Corticosteroids** (more severe, long term side effects)

# CAM Complimentary/Alternative Medicine

- ◆ **Traditional Chinese**
- ◆ **Mind / Body Interventions:** prayer, yoga, biofeedback, meditation, Tai Chi,
- ◆ **Manipulative:** chiropractic, massage, physiotherapy
- ◆ **Biologically based:** herbs, minerals, protein, nutritional supplements, pre/probiotics etc
- ◆ **Energy Therapies:** Reiki, Qi Gong, distant healing, therapeutic touch, magnetic, acupuncture, prayer

# TIPS

- ◆ The pain is real: Listen, validate
- ◆ Identify abilities prior to surgery to assess post op recovery
- ◆ Restart meds a.s.a.p. post-op
- ◆ Endurance issues – pace
- ◆ Cognitive concerns with instructions
- ◆ Support in decision making
- ◆ Encourage focus on ‘managing recovery’ not ‘the pain’ or ‘neuropathy’
- ◆ Ice water or extremely cold compresses can cause damage to small nerve fibres

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# Tips con't

- ◆ Teach CAM: meditation, visualization, deep breathing, techniques to alter pain perception i.e distraction, negative thoughts to positive
- ◆ Ask: What are your greatest concerns regarding your pain?  
Ask: What do you believe is the best way to manage your pain?
- ◆ Keep covers light, roll back or tent at feet
- ◆ Don't assume you can touch a body part –sensitivity
- ◆ Know pain tends to be worse at night
- ◆ Foot care: check circulation, pressure points
- ◆ Encourage awareness/understanding/research in neuropathy
- ◆ Living Well Program – refer



# OTHER TREATMENTS

- ◆ Nerve blocks
- ◆ Spinal cord stimulator, intrathecal pump
- ◆ TENS (Transcutaneous Electrical Nerve Stimulator)
- ◆ Massage, Physio
- ◆ Foot care
- ◆ Loose socks
- ◆ Well-fitted, comfortable shoes
- ◆ Rest/pace
- ◆ Braces, assistive devices, gait aids, mobility devices

# JUST THE BEGINNING...

- ◆ Thank you for your interest in learning about Neuropathy
- ◆ Encourage others to learn about neuropathy and get involved in awareness, understanding, treatment, and research