# PART IV: NEUROPATHIC PAIN SYNDROMES

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# NEUROPATHIC PAIN

- "PAIN ARISING AS DIRECT CONSEQUENCE OF A LESION OR DISEASE AFFECTING THE SOMATOSENSORY SYSTEM"
- AFFECTS 3-8% OF POPULATION
- CHARACTERISTICS
  - BURNING
  - SHOOTING
  - ELECTRIC
  - LIMITED BENEFIT FROM OPIOIDS
  - MAY OR MAY NOT BE CONFINED TO KNOWN NERVE/NERVE ROOT DISTRIBUTION

# NEUROPATHIC PAIN

- PERIPHERAL NEUROPATHY
- PHANTOM LIMB PAIN
- POST-HERPETIC NEURALGIA
- COMPLEX REGIONAL PAIN SYNDROME
- TRIGEMINAL NEURALGIA
- CENTRAL PAIN POST-STROKE
- OTHERS
  - MULTIPLE SCLEROSIS PAIN
  - POST-SURGICAL/INJURY NEUROPATHIC PAIN
  - CHRONIC RADICULOPATHY
  - ARACHNOIDITIS

# PERIPHERAL NEUROPATHY

- PERIPHERAL NEUROPATHY
  - DIABETIC
  - CHEMOTHERAPY-INDUCED
  - METABOLIC
  - IDIOPATHIC
  - ALCOHOLIC
- CHARACTERISTICS
  - BILATERAL AND SYMMETRIC
  - STOCKING GLOVE DISTRIBUTION
    - USUALLY STARTS IN FEET
  - CAN BE PROGRESSIVE
  - CAN HAVE MILD MOTOR WEAKNESS
  - MAY OR MAY NOT HAVE OBJECTIVE SENSORY DISTURBANCES

# PERIPHERAL NEUROPATHY

- DIAGNOSIS
  - HISTORY
  - EMG: WILL NOT DETECT SMALL-FIBER NEUROPATHY
  - BASIC WORKUP FOR REVERSIBLE CAUSES
    - A1C
    - TSH
    - B12 AND FOLATE
    - CMP
    - ESR
    - RF
    - ANA
    - SPEP

# PHANTOM LIMB PAIN

PAIN PERCEIVED IN AN ABSENT BODY PART

- VARIABLE INCIDENCE, 60-80% IN 1ST YEAR, MAY DIMINISH OVER TIME
- ↑INCIDENCE: TRAUMATIC AMPUTATION, UPPER EXTREMITY AMPUTATION

ONSET

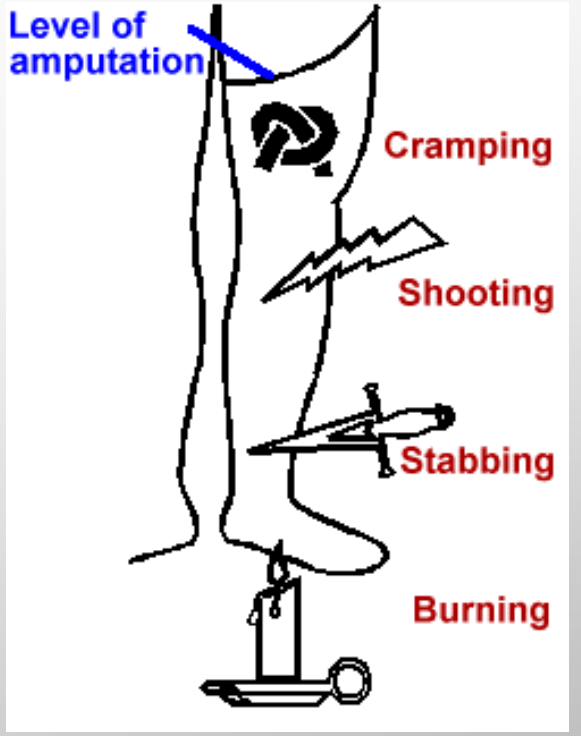
- IMMEDIATE OR YEARS LATER

DURATION

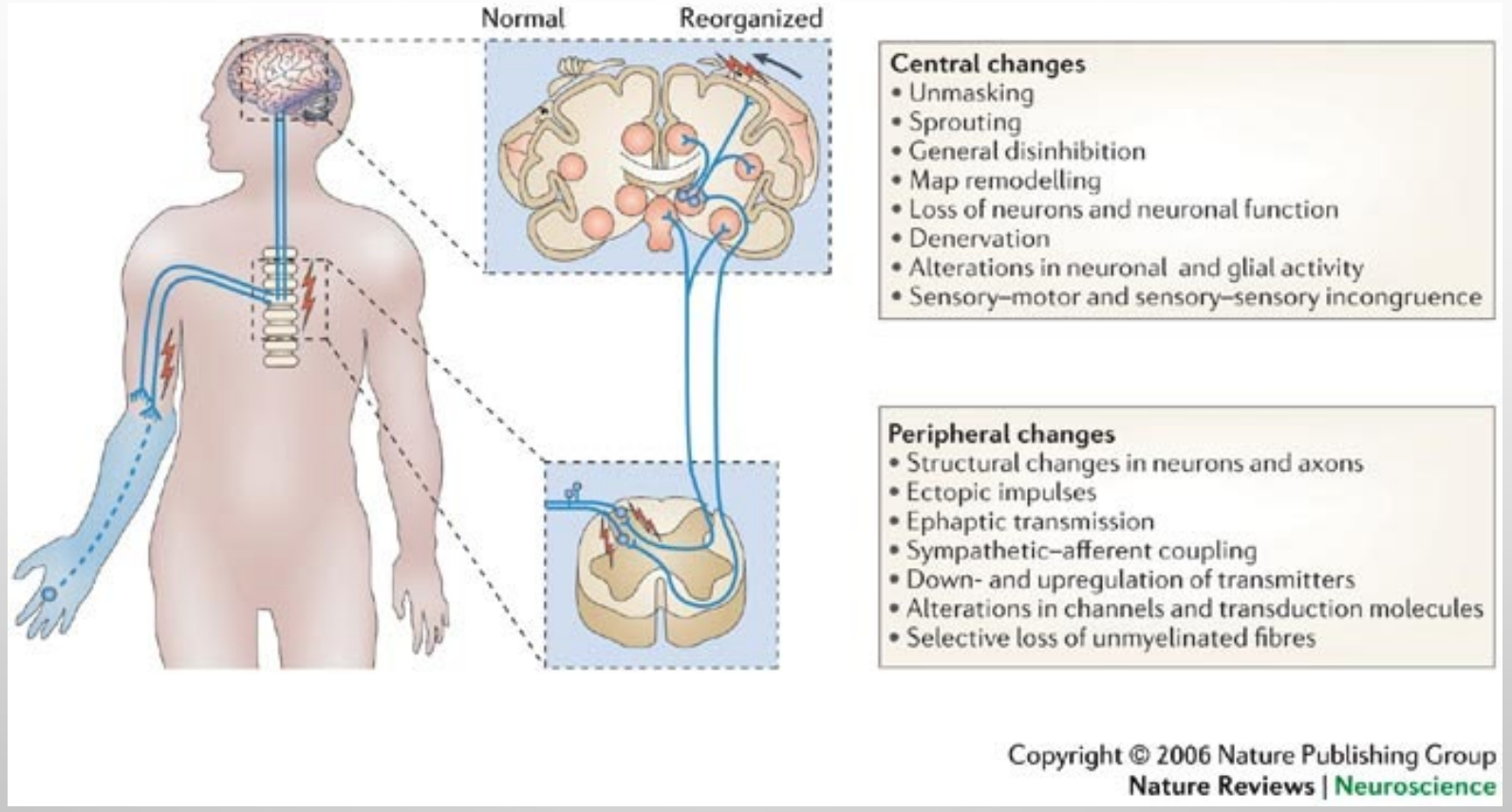
- RANDOM, RECURRING INTERVALS
- CAN RESOLVE SPONTANEOUSLY OR PERSIST FOR YEARS

SEVERITY:

- FOR 3–10% OF AMPUTEES, PHANTOM PAIN IS CHRONIC & SEVERE

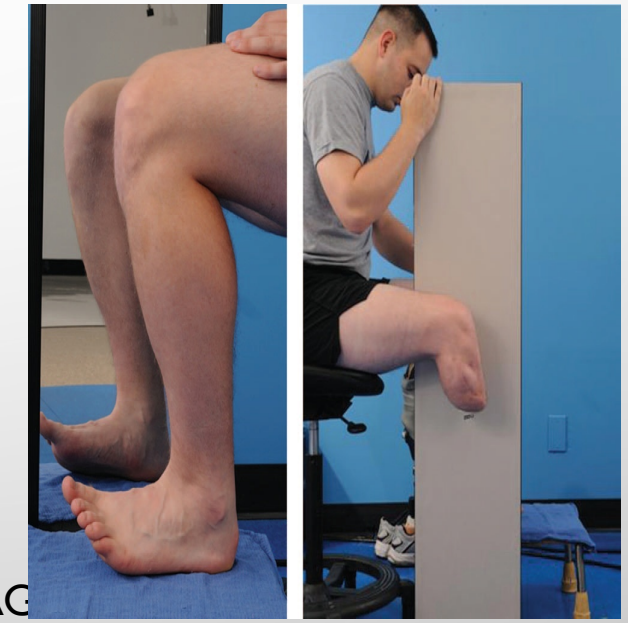


# PATHOPHYSIOLOGY OF PHANTOM LIMB PAIN



# PREVENTION OF PHANTOM LIMB PAIN

- REFERRAL TO SPECIALIST WEEKS TO MONTHS BEFORE AMPUTATION IF POSSIBLE
- INTERDISCIPLINARY TREATMENT FOCUSED ON:
  - PAIN: SOMATIC, NEUROPATHIC, MYOFASCIAL
  - PSYCHOLOGICAL SUPPORT
  - PHYSICAL THERAPY
  - FAMILY SUPPORT
- MIRROR THERAPY?
  - LINKS VISUAL AND MOTOR PATHWAYS TO IMAG
    RECREATE BODY
  - REVERSE MALADAPTIVE MEMORY TRACES



# TREATMENT OF PHANTOM LIMB PAIN

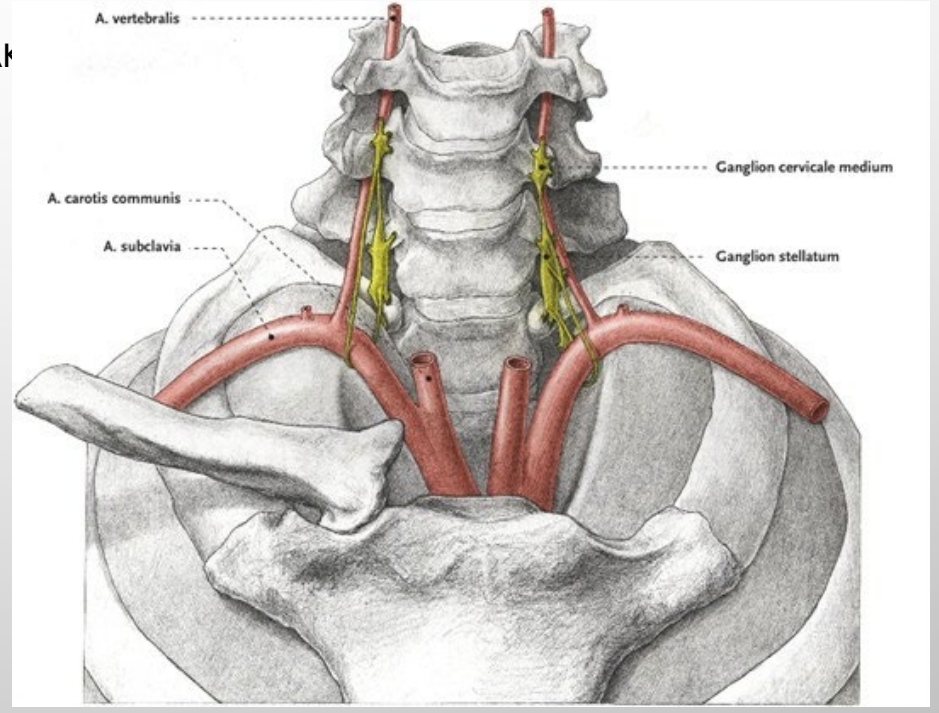
| Medical | Physical | Psychological | Invasive |
|---|---|---|---|
| Gabapentinoids | Physical therapy | Explanation | Stump revision |
| TCAs | Mirror therapy | Guided Imagery | Neuroma resection |
| SNRIs | Prosthesis adjustment | Relaxation | Spinal cord stimulation |
| Anticonvulsants | Stump desensitizing | Behavioral therapy | Thalamic/cortex stimulation |
| Beta-blockers | Acupuncture | Hypnosis | |
| Ketamine | Stump massage | Biofeedback | |
| Lidocaine IV | TENS | Psychotherapy | |

# POST-HERPETIC NEURALGIA

- PAIN THAT PERSISTS AFTER SHINGLES INFECTION
  - UNILATERAL, DERMATOMAL
- INCREASE IN INCIDENCE WITH AGE
  - 80% IN PATIENTS 80YO
- SEVERE BURNING, SHOOTING PAIN +/- SKIN HYPERSENSITIVITY
- MORE COMMON IN IMMUNOSUPPRESSED PATIENTS
- EARLY TREATMENT ASSOCIATED WITH IMPROVED OUTCOMES

# POST-HERPETIC NEURALGIA

- PREVENTION
  - ANTIVIRALS IN FIRST 48 HOURS OF SHINGLES OUTBREAK
  - ZOSTER VACCINE IF > 60YO OR PRIOR OUTBREAK
- TREATMENT
  - NEUROPATHIC AGENTS
- INTERVENTIONAL THERAPIES
  - STELLATE GANGLION BLOCK
    - FACE/UPPER EXTREMITY
  - EPIDURAL STEROID INJECTION
    - THORAX/ABDOMEN



# COMPLEX REGIONAL PAIN SYNDROME

- SPECTRUM OF DISEASE BUT VERY SPECIFIC
  - NOT "PAIN NOS," NOT REFLEX SYMPATHY DYSTROPHY (RSD)
- CONTINUOUS PAIN, DISPROPORTIONATE TO ANY INCITING EVENT
- HISTORY OF ONE SYMPTOM IN 3 CATEGORIES AND PRESENCE AT THE TIME OF EVALUATION OF SYMPTOMS IN 2 CATEGORIES:
  - SENSORY – HYPERESTHESIA, ALLODYNIA
  - VASOMOTOR – TEMPERATURE ASYMMETRY, SKIN COLOR CHANGES
  - SUDOMOTOR/EDEMA – SWELLING, SWEATING
  - MOTOR/TROPHIC – DECREASED RANGE OF MOTION, MOTOR DYSFUNCTION, TROPHIC CHANGES
- NO OTHER DIAGNOSIS THAT BETTER EXPLAINS THE SIGNS/SYMPTOMS

# COMPLEX REGIONAL PAIN SYNDROME

- UNCOMMON TO BE PRESENT IN MORE THAN 1 BODY PART
  - THERE IS NO SUCH THING AS “FULL-BODY CRPS” THOUGH CRPS HAS SYSTEMIC EFFECTS
- VARIABLE PROGRESSION OVER TIME – OVERALL FAVORABLE
  - RETURN OF FUNCTION AND RELIEF OF PAIN ASSOCIATED WITH EARLY AND AGGRESSIVE CARE
- TREATMENT
  - PHYSICAL THERAPY WITH DESENSITIZATION FOLLOWED BY INCREASING FLEXIBILITY, RANGE OF MOTION AND STRENGTH
  - PHARMACOTHERAPY WITH ANTI-NEUROPATHIC AGENTS
  - SYMPATHETIC NERVE BLOCKS TO FACILITATE PHYSICAL THERAPY
  - MORE INVASIVE THERAPIES IF NEEDED (SPINAL CORD STIMULATOR)

# COMPLEX REGIONAL PAIN SYNDROME

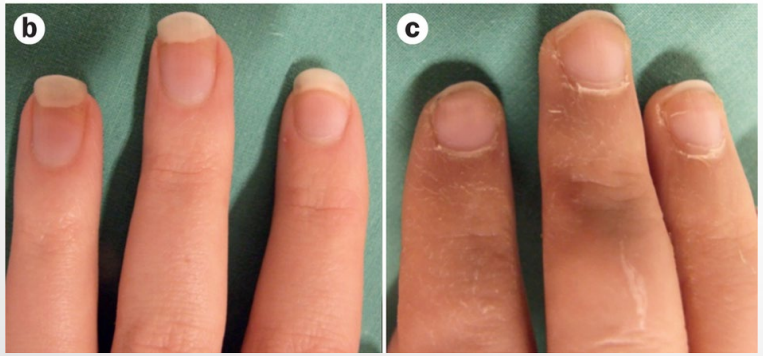
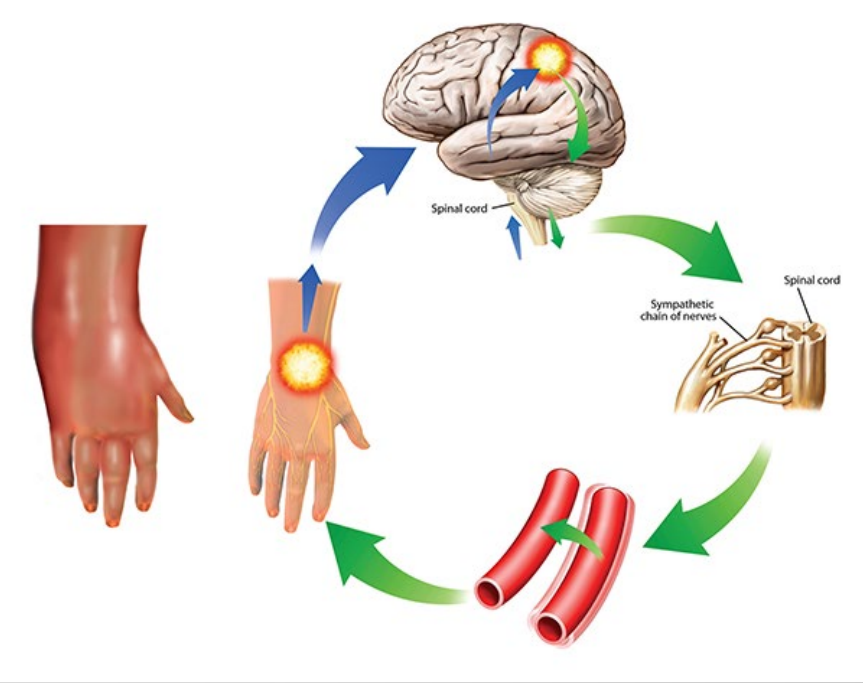



Photo courtesy of Dr. Steven Richelmie.

**Figure 1.** Image of a patient with lower extremity complex regional pain syndrome.

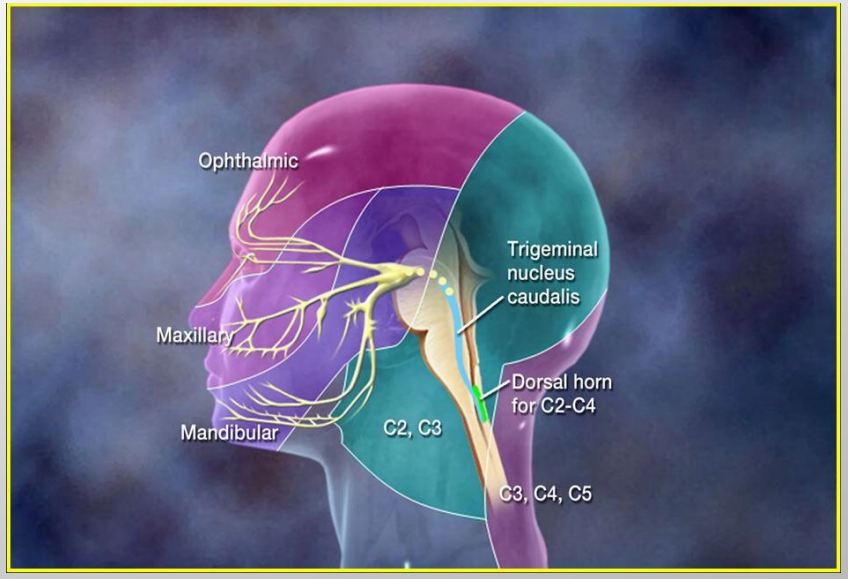
# COMPLEX REGIONAL PAIN SYNDROME

- PHYSICAL THERAPY
  - EXPERIENCED PROVIDER
  - DESENSITIZATION THERAPY
  - MIRROR THERAPY
  - INCREASING RANGE OF MOTION SLOWLY
- SYMPATHETIC NERVE BLOCKS
  - USED TO FACILITATE PT AND BREAK CYCLE OF PAI
- NEUROPATHIC MEDICATIONS



# TRIGEMINAL NEURALGIA

- **PAROXYSMS ATTACKS OF INTENSE, SHARP FACIAL PAIN**
- TYPICALLY UNILATERAL, V2 AND V3 DISTRIBUTIONS, ELECTRIC SHOCK
  - IF V1 DISTRIBUTION ONLY RECONSIDER DIAGNOSIS
- REFRACTORY PERIOD COMMON
- LONGSTANDING TN MAY LEAD TO CONTINUOUS PAIN
  - DULL ACHE IN AREA BETWEEN ATTACKS



# TRIGEMINAL NEURALGIA

- TRIGGERED BY TOUCH, SMILING, GRIMACING, TALKING, COLD AIR, BRUSHING TEETH, FACIAL MOVEMENTS
- TRIGGER ZONES WORSEN NEAR MIDLINE, PRECIPITATE ATTACKS
- PREVALENCE: 4-13 PER 100,000, INCREASES WITH AGE
- 1:1.5 MALE : FEMALE RATIO
- INCREASED PREVALENCE WITH MS
- VARIABLE COURSE
  - ATTACKS FOR WEEKS TO MONTHS FOLLOWED BY REMISSION
  - RECURRENCE COMMON

# TRIGEMINAL NEURALGIA TREATMENT

- CARBAMAZEPINE - 600 - 800MG DAILY
  - AAN REVIEW: COMPLETE/NEAR COMPLETE RELIEF IN 58-100%
  - LIMITED BY SIDE EFFECTS
    - DROWSINESS, DIZZINESSS, N/V, LEUKPENIA, APLASTIC ANEMIA
- OXCARBAZEPINE - 1200-1800MG DAILY
  - AAN REVIEW: EFFECTIVE WHEN COMPARED W/ CARBAMAZEPINE
  - LESS SIDE EFFECTS
- ABLATION
  - NEUROLYTIC BLOCK, BALLOON DECOMPRESSION, GAMMA KNIFE
- SURGICAL DECOMPRESSION

# CENTRAL PAIN POST-STROKE

- ASSOCIATED WITH DAMAGE TO THALAMUS
- TYPICALLY AFFECTS ONE ENTIRE SIDE OF BODY
- MAY BE ACCOMPANIED BY ALLODYNIA
- DEPENDING ON LOCATION OF CVA OTHER AREAS MAY BE AFFECTED
- VERY DIFFICULT TO TREAT

# THANK YOU!

- QUESTIONS OR COMMENTS?