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

Central changes
- Unmasking
- Sprouting
- General disinhibition
- Map remodelling
- Loss of neurons and neuronal function
- Denervation
- Alterations in neuronal and glial activity
- Sensory–motor and sensory–sensory incongruence

Peripheral changes
- Structural changes in neurons and axons
- Ectopic impulses
- Ephaptic transmission
- Sympathetic–afferent coupling
- Down- and upregulation of transmitters
- Alterations in channels and transduction molecules
- Selective loss of unmyelinated fibres

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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 IMAGE RECREATE BODY
  • REVERSE MALADAPTIVE MEMORY TRACES
### Treatment of Phantom Limb Pain

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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
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 PAIN

- 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

- OXCARBAMAZEPINE - 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?