1 **Complex Regional Pain Syndrome**

Artee Gandhi MD
Medical Director Pain Management
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2 **Objectives**

•Define the epidemiology of CRPS
•Evaluate the pathophysiology of CRPS
•Review the clinical symptoms of CRPS
•Discuss the differential diagnosis of CRPS
•Explain the treatment of CRPS
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3 **Epidemiology**

•More common in females
•Mean age at diagnosis is 12yo
•Lower extremity more often than upper extremity
•CRPS Type I predominant form
•?Genetic component
•Family history

4 **Normal Pain Processing**

5 **Gate Control Theory**

6 **Gate Control Theory**

7 **Central Sensitization**

8 **Central Sensitization**

•Pain modifies the way the central nervous system works
•Sensitized patients are more sensitive
•Pain echoes
•Not the cause of pain but the cause of the chronicity
•Disease of over reaction to threats
•Pain Hallucinations
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9 **Experimental Evidence**

•Abnormalities in Quantitative Sensory Testing
•Neurochemical abnormalities
•Changes in hypothalamic-pituitary-adrenal axis
•Neuroimaging
•Epigenetic and pathophysiologic changes
•Decreased opioid binding potential

10 **Clinical Diagnosis**

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12 **Psychological Factors**

- •Stress related disorder
- •High levels of anxiety
- •Tendency toward over achieving or to learning difficulties
- •School absenteeism
- •Two distinct types of families:
  - •high levels of cohesion, expression and organization and with low to average levels of conflict
  - •high overt conflict levels and low levels of family cohesion, expressiveness and organization
- •Parental enmeshment with their child

13 **Differential Diagnosis**

1 •Fibromyalgia
- •Hypermobility
- •Myofascial pain
- •Fracture/strain/sprain
- •Arthritis
- •Spondyloarthropathy
- •Leukemia
- •Progressive diaphyseal dysplasia
- •Idiopathic juvenile osteoporosis
- •Thyroid disease

2 •Spinal cord tumors
- •Chronic recurrent multifocal osteomyelitis
- •Raynaud's disease
- •Fabry's disease
- •Erythromelalgia
- •Chronic compartment syndrome
- •Peripheral mononeuropathy
- •Vitamin D deficiency

14 **How do we treat pain?**

- •Conventional Analgesics
- •Nonconventional Analgesics
- •Interventional Procedures
- •Physical Therapy/Occupational Therapy
- •Cognitive Behavioral Therapy/Psychotherapy/Biofeedback
- •Complementary Medicine
- •Integrative therapies
- •

15 **"Neuro-Education"**

- •Pain is real
- •Problem is not with the tissues themselves but in the pain system itself
- •Disordered pain processing system interconnects with other components of the nervous system
- •"Real" disease or disorder
- •Treatment is available

16 **Inpatient Rehab Program**

- •Fail outpatient program/Limited resources
- •Psychological readiness
- •Understand the goals of the program

- Accept the structure
- Prepare for discharge

17 **Program Overview**

- 2 week program
  - Scheduled admission under pain service
  - Changed from one week to two in 2013
- Admit conference, mid-stay conference, and discharge conference
- Parents present at all conferences, in the evenings 5-7pm, half day on Saturdays, and full day on Sundays
- Limit to one patient with chronic pain at a time

18 **Program Overview**

- 3 hours of therapy(PT and OT), 6 days per week
- CBT with clinical therapist, Neuropsychological testing, Biofeedback
- School time
- Complementary therapies- massage, acupuncture, pet therapy, art, music, child life
- Therapeutic Outings
  - Continue to work on therapy goals
  - Community re-entry
  - School outing in some cases
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19 **Prognosis**

- More favorable than for adults
- Relapses are common
- Younger age at time of injury correlates with less pain, better function, fewer remaining signs of autonomic dysfunction on follow-up and a shorter total duration of symptoms. Younger patients more likely to return to sports

20 **It Takes Team Work**

21 **Parental Involvement**

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23 **References**

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