

Complex Regional Pain Syndrome:

Understanding the presentation, current management, as well as the role of the athletic trainer in recognizing CRPS in children and adolescents.

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June 3, 2016



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Disclosure

- Patients shown in this presentation have consented to the use of their pictures/videos for educational purposes



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Objectives

- Understand the diagnosis of complex regional pain syndrome and the basic physiology
- Identify common signs and symptoms presenting in an athlete with complex regional pain syndrome and the importance of early recognition and diagnosis
- Be familiar with psychological implications of children and adolescents with complex regional pain syndrome
- Understand the current multidisciplinary management for patients diagnosed with complex regional pain syndrome and how this affects their ability to participate in their sport.



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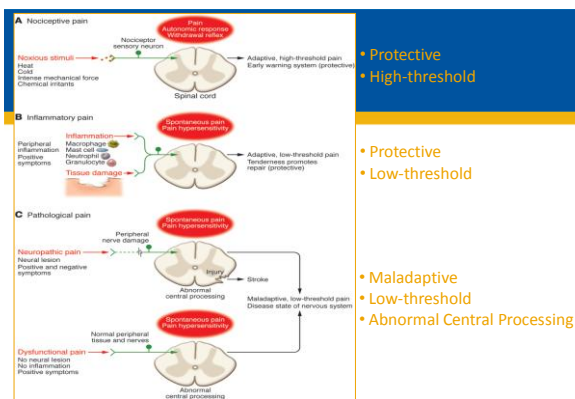
Pain

- Pain is real
- Patients are generally NOT faking it
- Pain can arise from:
 - Injury
 - Illness
 - Psychological stress
 - Idiopathic

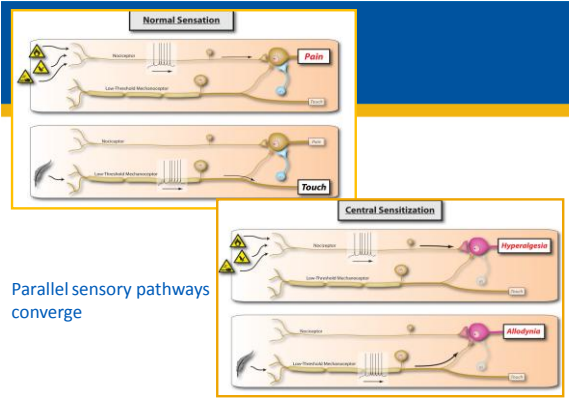
Definition of Pain:

As written by the International Association on the Study of Pain:

Pain is an unpleasant sensory and emotional experience which follows actual or potential tissue damage or is described in terms of such damage.



- Protective
- High-threshold
- Protective
- Low-threshold
- Maladaptive
- Low-threshold
- Abnormal Central Processing



Parallel sensory pathways converge

Complex Regional Pain Syndrome (CRPS)

- Has also been know as:
 - "Cold blue foot", Reflex Sympathetic Dystrophy, causalgia
- Defined as a chronic pain condition affecting the nerves and blood vessels
 - Generally no identifiable nerve damage
- Pain disproportionate in severity as well as length of healing related to the initial event
- May occur after trauma or injury that is often trivial
- Diagnosed after excluding other diagnoses through laboratory testing and radiographs

Complex Regional Pain Syndrome

- History may include:
 - Fractures, sprains, minor injury recently
 - Immobilization after a minor injury
 - Pain is out of proportion to what would be expected after an injury
 - Recent surgery
 - Observed autonomic changes in an extremity not consistent with injury
 - Environmental stressors

Complex Regional Pain Syndrome (CRPS)

Signs and Symptoms:

- Sensory disturbances:
 - Allodynia/Hyperalgesia
 - Autonomic dysfunction
 - Swelling
 - Glossy skin
 - Increased nail growth
 - Temperature changes
 - Motor dysfunction
 - Decreased ROM
 - Impaired active movement

Exam Findings

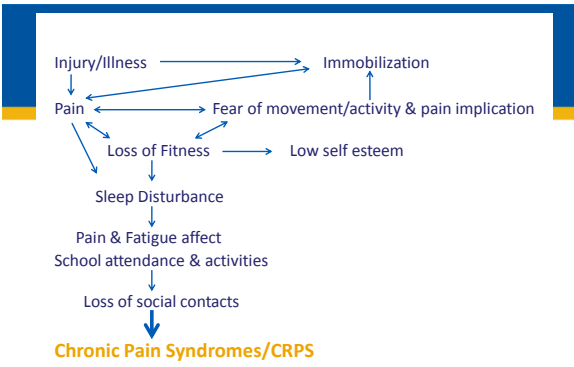
- Incongruent affect
- May have normal strength and neurological findings
- Poor cardiopulmonary endurance
- Poor muscle endurance
- Allodynia and/or Hyperalgesia
- Severe pain with movement of the limb; pain may be relieved with holding limb motionless

****All have pain out of proportion to exam finding****

| Clinical Characteristic | Children | Adults |
|-------------------------|--|--|
| Affected Extremity: | Lower >> Upper (6:1) | Upper > Lower |
| Sex Ratio: | Female (7:1) | Female (2-4:1) |
| Inciting injury: | Less often | More often |
| Exam findings: | - Skin cooler - Neurologic symptoms less pronounced | - More likely to have "stages" of change |
| Psychological Issues: | More common | Less common |
| Prognosis: | Excellent – full recovery in most cases | Variable – long term disability common |

Conversion Symptoms

- Conversion Disorder:
 - Somatoform Disorder
 - Affects voluntary motor and/or sensory function
 - Symptoms are unconscious manifestations of psychological stressors
 - Individual cannot control the symptoms
 - "Consistently inconsistent"
 - Is not malingering
- Examples of symptoms may include:
 - Limb locking
 - Shaking
 - Lack of ROM
 - Fluctuating weakness
 - Foot drop
 - Etc.



Role of Stress

Stress can play a role in development of pain:

- Positive and/or negative stress
- School stressors
- Family stressors

Stress increases pain <-> pain increases stress

- One CANNOT presume that depression or anxiety predispose an individual to CRPS

Psychosocial Considerations

- Development of pain responses is multifactorial:
 - Demographics and personality traits
 - Genetics
 - Early life events or PTSD can increase stress
 - Etc
- Barhoorn, et al. found that pain lead to catastrophic thoughts which lead to fear and avoidance of movements causing greater disability.¹
- “Fear of pain in children and adolescents with neuropathic pain and complex regional pain syndrome” by Laura Simons²¹

Fear Avoidance Model



Role of the Athletic Trainer

Recognition of signs/symptoms:

- Referral back to individual's physician when symptoms do not match the initial diagnosis
- Identify patient's functional ability/disability and fear of pain during assessments to determine impact on recovery
- Provide consistent messages to the athlete in order to change their belief of pain

Early recognition by care providers is important in quick diagnosis^{12,14,15}:

- Early Diagnosis = quicker recovery and return to sport, less severe presentation
- Delayed Diagnosis = longer recovery, severe complications

Role of the Athletic Trainer

Interaction:

- Are you currently seeing athletes with CRPS?
- What are you currently doing to treat athlete's diagnosed with CRPS?

Multidisciplinary Treatment

- **3 Prong Approach** for successful outcomes⁷:
 - Physical Activity
 - Desensitization
 - Stress Management
- Obtain recommendations from physician including:
 - Progressive mobilization and decreased/stopped use of assistive device for mobility
 - Ability to discharge use of immobilizers including CAM walkers
- Focus on improving function and not pain relief

****Function will generally return before pain fully resolves****

Treatment Strategies

- Therapeutic interventions being utilized^{7,10,14,15}:
 - Education on CRPS/pain
 - Motor Imagery
 - Laterality Exercises
 - Desensitization
 - Sensory Discrimination
 - Mirror Therapy
 - Functional activity/ROM/strengthening exercises for return to sport/activity
- Return to daily activity or sport as able to participate safely.
- Avoid focusing on or asking about pain**
- Pain may initially increase as you start interventions before decreasing

Treatment Strategies

Types of Sensation:

1. Light touch
2. Deep pressure
3. Vibration
4. Temperature

Desensitization techniques¹⁴:

- Lotion rub/massage
- Washcloth rub
- Cold/ice massage
- Audible tapping
- Vibration
- Taping
- Etc.

Role of the Athletic Trainer

- Rehabilitation by the athletic trainer:
 - Continued education on pain/diagnosis to facilitate recovery process
 - Activity/sport specific assessment
 - Functional/sport specific exercises
 - Agility training
 - Endurance training
 - Proprioceptive activity to improve balance/coordination for specific sport
 - Exercises to improve strength, speed, power for specific sport
 - Assisting in determining when athlete is ready to return to full sport participation/games.
 - Continued communication with multidisciplinary team to ensure athlete progressing appropriately.

In Summary

- **Important to remember:**
 - The athlete may still have pain and need to work through this pain while rehabbing back to their sport.
 - You will often continue to see autonomic changes continue during treatment.
 - Pain decreases with full return to all daily activity and sport, but this does take time.
 - Pain may initially increase with intervention and exercises will cause pain.

Questions?

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