Pain

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Discussion Questions…

- Recognize what a Nociceptor is. (D)
- Recognize what Hyperalgesia is. (D/T)
- Recognize what Allodynia is. (D)
- Recognize the factors which influence pain. (D/T)
- Recognize the Gate-Control Theory of pain. (D/T)
- Recognize statistics related to Chronic pain. (D)
- Recognize the normal function of Glial Cells & their role in Chronic Pain. (D)
- Recognize current research on treating Chronic Pain. (D)

What is Pain's Purpose?

- Pain is your Body's Way of Telling you Something Has Gone Wrong!
- Pain & Injury do not always Match.

Nociceptor = Sensory Neurons for Pain

What is Pain's Purpose?

- Individual Tolerance Organic!
- "We cannot assume that another person's pain is inconsequential even if the injury looks unimpressive or would not be painful to us."

  - Ingrid Wickelgren

When Pain is Abnormal?

- Hyperalgesia – Some extreme sensitivity to mild pain triggers.
- Allodynia – Some feel pain to stimuli which normally does not produce pain, wind, light touch etc.
- Congenital Indifference to Pain (CIP) - do not feel any pain! Fewer than 30 in the world.

Factors Which Influence Pain

BioPsychoSocial Approach

- Biology
  - Genes 22-60%
  - Brain (Amygdala, ACC)
  - Spinal Cord Fibers
  - Hormones (Protective)
  - Enzymes (COMT 11%)
  - Damaged Nerves
- Psychology
  - Attention
  - Expectations (told/learn)
  - Emotional States
- Social-Culture
  - Males (Macho!)
  - African Americans
- Memory
- Intensity Level
  - Other sensations

Gate-Control Theory

- Melzack & Wall
- Spine has Neurological Gate
- Small nerve fibers open Gate, Large Close
- Close Gate by massage, acupuncture, Tens Unit etc.
- Brain: Distraction & Endorphins
  - Jay Burson broke neck & still played

Chronic Pain

- 10%-20% US & Europe
- 59% Female
- 18% Adults visit Alternative Medicine Therapist
- 15% Physicians feel comfortable treating
- 41% Wait until Patient requested Narcotics before prescribing
- ½ chronic pain patients fail to recover in a year.

Chronic Pain

- Glial Cells 90% of Brain Cells!
  - Astrocytes & Microglia
  - Nurture (nourishment & protection) the activity of the Neuron.
  - Sop up Neurotransmitters & sometimes Dispense
  - Release Growth Factors when Neurons damaged
  - Release substance to get Immune System to fight infection and heal
- Become Unbalanced & Disrupt Neural Activity
  - Prolongs state of neural sensitization

Chronic Pain

- 1894 Nissl - Nerve Damage
  - Microglia more abundant
  - Astrocytes plump up thick fibers
- Dorsal Root Ganglion (DRG) Neurons can become hypersensitive

Treating Chronic Pain

- Currently looking into:
  - Quieting Glia
  - Blocking inflammatory trigger molecules and signals
  - Delivering Anti-inflammatory signals
- Marijuana
  - CB1 Psychoactive
  - CB2 works on Glia
  - Chronic Pain # of CB2 receptors on microglia increase
  - Attempting drugs CB2

Treating Chronic Pain

- Narcotics like Morphine
  - Tolerance leads to Addiction
  - Morphine up then Glia increase excitability to balance thus need more Morphine
  - Withdrawal Cold Turkey creates major pain & hyperstimulates senses but this can be reduced by using drugs which block glia responses

Treating Chronic Pain

- Genes influence a liver enzyme so that with some codeine does not convert to morphine & for others it works too well & can kill them.
- Hundreds of genes which influence pain and pain control

Sources other than Text

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