Mental Life Aspects of Chronic Pain

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"We all must die. But if I can save him from days of torture, that is what I feel is my great and ever new privilege. Pain is a more terrible lord of mankind than even death himself."

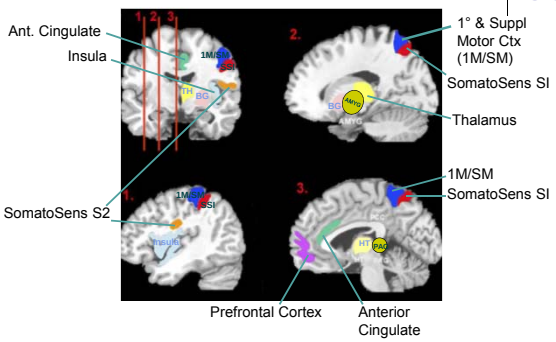
Albert Schweitzer

Alice: Peripheral Neuropathy

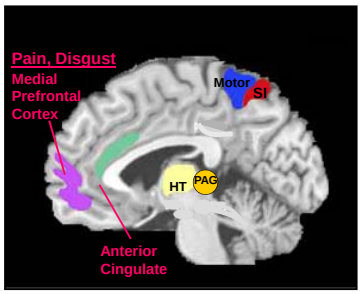
Goals

- Update on neuroscience of pain
- Distinguish components of the pain experience
- Learn psychiatric complications of pain
- Recognize unique features of depression in pain
- Appreciate treatment challenges & approaches

Brain Network (Matrix)



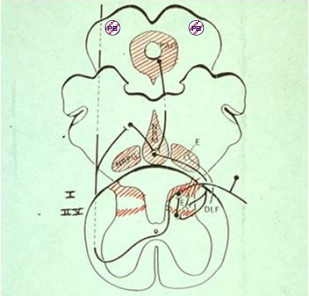
MNS:
Pain, Disgust, Touch, Posed Faces



Endogenous Opioids (EO)
Ascending & Desceding Pathways

- Areas rich in μEO receptors
  - Ascending
    - Thalamus, Insula, ACC, PFC
  - Descending
    - PAG, RVM (Raphe Nucleus), DLF, D Horn
- Effects of μ-opioid agonists
  - ↑ rCBF in above EO rich areas
  - ↓ Activation of Brain Matrix to
    - Noxious cold
    - Neuropathic pain
    - RA-related pain
    - Skeletal muscle pain

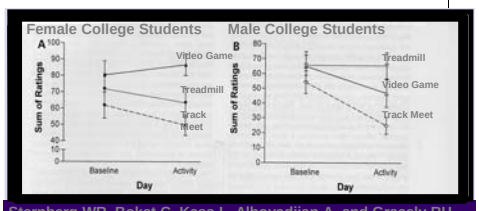
Descending Modulation



Endogenous Opioids
Gender

- Women: ↑ μ-Opioid receptors
- Women: ↑ μ-Opioid agonist response
  - Varies with phase of menstrual cycle
  - Less robust after menopause

Conscious Mental Events Affect Pain Perception



Sternberg WR, Bokat C, Kass L, Alboyadjian A, and Gracely RH, "Sex-Dependent Components of the Analgesia Produced by Athletic Competition"
The Journal of Pain, 2:1, 65-74 (2001).

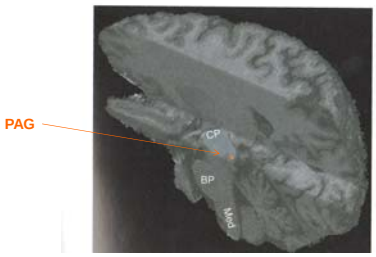
Negative Emotions
Decrease Descending Modulation

- ACC, PFC, Amygdala modulate PAG
- Adaptive and Maladaptive Anticipation
  - ↑ PFC (DLPFC) activity occurs in acute pain and placebo studies, associate with ↓ Thalamus, Insula, ACC activation and ↓ pain
  - ↑ PFC (medial) activity in chronic pain correlates with negative emotions and pain intensity

Emotional & Attentional Effects

- **Emotion (& Unpleasantness):**
  - Modulate pain via IC (anterior), ACC, TH, Amygdala, PAG
- **Attention (& Intensity):**
  - Modulate pain via S1, CC (posterior), Orbitofrontal Ctx, Entorhinal Complex, VTA
  - Focusing on pain intensity before any stimulus increases activity in these areas

Distraction: ↑ PAG Activation



Basic Concepts

- Empathy vs. Compassion vs. Sympathy
- Accurate Empathy
  - Enter the patient's illness experience
  - Make invisible suffering visible ("Mentalized")
  - Focuses treatment on illness (experience) not organs (disease)
- Reactive Empathy
- Detached Empathy

Skill Development

- Mindful Empathy
  - Emotional Presence
    - Emotional Reactivity tempered by Cognitive Focus
    - "Other" focus with "Self" awareness
  - Vigilance about positive & negative bias
  - Ongoing formulation & treatment planning
    - Cortical activation to balance MNS
  - Theoretical value for Clinician
    - Prevent Over-Involvement
    - Prevent Disengagement
    - Prevent Burnout

Major Psychiatric Comorbidities in Chronic Pain

- Depression
- Anxiety Disorders
  - Panic D/O
  - PTSD
  - (Kinesiophobia)
- Adaptation to Chronic Illness
- Substance Abuse
- Abnormal Illness Behavior

Depression in Chronic Pain

- Prevalence of ≥ 1 in 3 chronic pain patients
- Loss of sex bias
- Atypical neurovegetative features common
- Externalized blame and hopelessness
- Significant suicidal ideation; lower intent and suicide vs. primary major depression. Intent more associated with depression than pain, disability, coping styles[1,2]
- Synergy of mood and pain cycles
- More often pain precedes depression

[1]Fisher, BJ, Haythornthwaite, JA, Heinberg, LJ, Clark, M, Reed, J. (2001) Pain, 89:199-206
[2]Fishbain, DA, (1996), Am J Public Health, 86(9):1320-21

Chronic Pain and Anxiety

5877 subjects completed the Composite International Diagnostic Interview and provided self-reports of pain and disability

382 patients had chronic pain

35.1% Any anxiety disorder OR = 2.86	6.5% Panic disorder OR = 4.27	10.7% Post-traumatic stress disorder OR = 3.69

OR = odds ratio.
McWilliams LA, Cox BJ, Enns MW. *Pain.* 2003;106:127-133.

Opioid-Treated Pain Patients
Opioid Abuse/Dependence Rates

Range of Reported Rates:
<1% to 25%
Opioid-Treated Pts* *Including subjects with and without prior histories of substance abuse

Best Current Estimate:
6% - 12%
Opioid abuse & addiction in opioid-treated patients

Weingarten, M.A. Chronic opioid therapy in patients with a remote history of substance abuse. *Journal of Pain & Symptom Management* **6**, 2-3 (1991).

Portenoy, R.K. Chronic opioid therapy in nonmalignant pain. *Journal of Pain and Symptom Management* **5**, S46-S62 (1990).

Portenoy, R.K. Opioid therapy for chronic noncancer pain: the issue revisited. *American Pain Society Bulletin* **1**, 4-7 (1991).

Portenoy, R.K. & Foley, K.M. Chronic use of opioid analgesics in non-malignant pain: report of 38 cases. *Pain* **25**, 171-186 (1986).

Porter, J. & Jick, H. Addiction rare in patients treated with narcotics. *New England Journal of Medicine* **302**, 123 (1980).

Bouckoms, A.J. et al. Chronic nonmalignant pain treated with long-term oral analgesics. *Annals of clinical psychiatry* **4**, 185-192 (1992).

Sleep Problems in Pain

- @ 30% of general population suffer sleep disturbance
- 50-70% of pain pts suffer sleep disturbance[1,2]
- Pain among most frequent causes of 2° sleep disturbance[3]

[1]Atkinson, JH et al. (1988) *Clin J Pain*
[2]Pilowsky, I et al. (1985) *Pain*
[3]Moffitt, PF et al. (1991) *J Int Med*

Pain & Sleep Disturbance:
Alpha-Delta Intrusions in NREM

- Alpha-delta NREM intrusions (≤ 31% CP pts)[1]
  - Emphasized in FM[2,3]
  - Documented in RA[4]
  - Seen in heterogeneous pain D/Os[1]

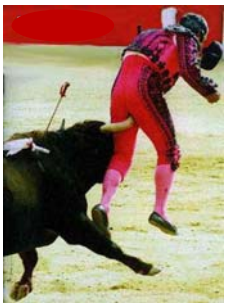
[1]Wittig, RM et al. (1982) *J Nervous Mental Dis*
[2]Moldofsky HM et al. (1975) Psychosom Med
[3]Branco J (1994) *J Rheumatol*
[4]Moldofsky HM (1983) *J Rheumatol*

Treatment & Treatment Challenges

Pemphigus

CRPS I (RSD)

Mirror Neuron System
Anti-Empathy

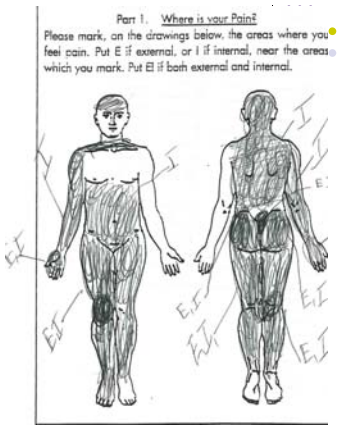


Pain Drawing
FM & Pelvic Pain

45-year-old female

1. Diffuse muscle pains 2° fibromyalgia
2. Chronic fatigue
3. Menstrually cycling pelvic pain, attributed to endometriosis
4. Cycling low mood & anxiety

Tx: Maximal hormonal tx, NT 75 mg/d, Fluoxetine 90 mg/wk, lidocaine 5% TD patch to abdomen, light supervised land & aquatic exercise.

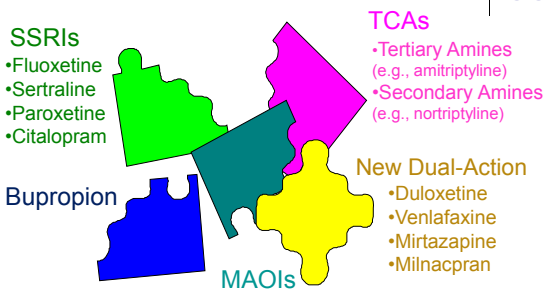


Compromise Formation

There's a vicious and strong temptation to nurture the hurt we wail about. The hurting has so nearly become us--become the whole core of our present self--that the thought of finally dismissing it from us feels scarily like desertion or killing.

Reynolds Price
A Whole New Life, 1994

Current Antidepressant Scene



Alice: Peripheral Neuropathy