THE INTERSECTION OF SLEEP AND PAIN

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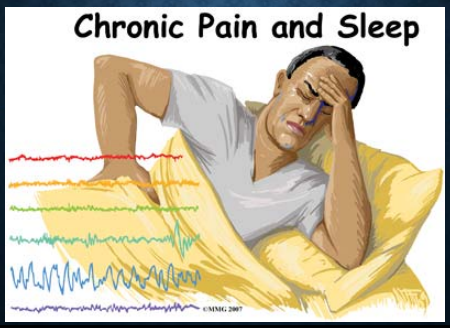
WHERE ARE WE?



SLEEP AND PAIN

- The chicken and the egg theory……
- Pain causes alterations in sleep continuity and sleep architecture.
- Disturbances in sleep affect pain.

SLEEP AND PAIN

- Research is ongoing and exploring this fascinating and dynamic relationship.
- How does sleep deprivation induce hyperalgesia?
- How does sleep deprivation counteract the analgesic effects of opiods and their mechanism of action.
- BIDIRECTIONAL Relationship is likely.

BIDIRECTIONAL EFFECT

SLEEP = PAIN

PAIN = SLEEP

KEY CONCEPTS TO BE MINDFUL OF

- It appears sleeping well may result in better coping skills.
- Conversely, the association of Sleep with Pain and vice versa, reinforces a "negative attitude and negative thoughts"

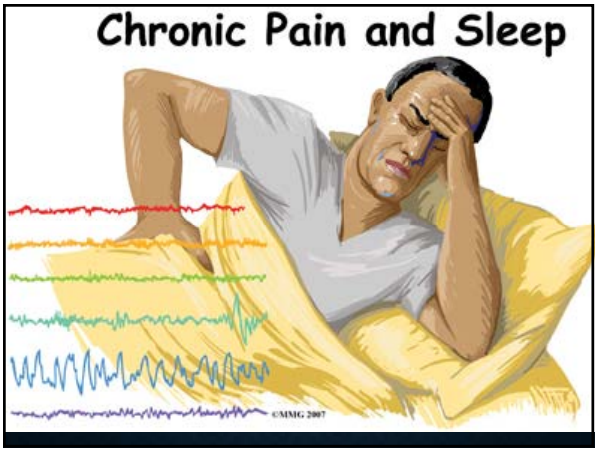
SLEEP AND PAIN INTERFACE

- Sleep disturbances are higher in patients with chronic pain than in the general population.
- 50-89% of chronic pain patients complain of poor sleep quality
- Most common symptoms described in patient with pain include: ***insomnia, nonrestorative sleep and EDS.***
- Most common sleep abnormalities include: **sleep** fragmentation, decreased sleep efficiency and reduced SWS.
- Primary sleep disorders are often present: ***sleep apnea, RLS, PLMD and insomnia.***

Sleep and Pain 2007 Giles Lavigne

WHY IS THAT?

- It appears that insufficient or poorer quality sleep alters the opioid/serotonin pathways in the brain and results in a lowering in the threshold for perceiving pain.
- A stimulus that might appear to be slightly uncomfortable may now feel quite severe without any change in the actual degree of noxious stimuli.



SLEEP HOMEOSTASIS- ESSENTIAL FOR HEALTHY LIFE

- Healthy sleep requires that we regularly achieve cyclical periods of NonREM and REM sleep that are uninterrupted and are of a sufficient duration to meet or individual physical and mental requirements.
- REM mentally restorative
- Non REM physically restorative

ASSESSMENT OF PAIN PATIENT

- Sleep Quality: screening

Sleep Diary-- circadian issues, insufficient sleep

ESS

RLS

Insomnia

Stop-Bang

Medication list (OTC included)

SLEEP IN A PAIN PATIENT

- Contains increased Stage 1 and Stage 2
- Little of no SWS

SLEEP GENERATION AND PAIN CONTROL AREAS

- NonREM sleep originates from the hypothalamus and the basal forebrain
- Both of these areas contain active GABA neurons and are involved in sleep-wake states as well as pain control.
- REM sleep is controlled primarily within the brainstem and overlaps with the area dedicated to pain control (filtering out painful sensations).

ONGOING CHALLENGES

- The side effects from pain management that impact sleep and the integration of physical, psychologic and environmental factors is quite complex within this patient population.
- Efforts to induce sleep in patients with chronic pain can both contribute to or mask the presence of a sleep disorder.
- Self medicating efforts intended to self-treat Insomnia or EDS often complicate their pain management, sleep quality and in many cases contribute to a delay in their sleep treatment.

COMPLEX POLYPHARMACY IN A PAIN PATIENT

- Increased number of medications that new referrals are taking.
  - OTC's sleep aids (diphenhydramine, melatonin)
  - Anti-inflammatory (NSAID's)
  - Narcotics analgesics
  - Muscle relaxants
  - Antidepressants (TCI's, SSRI's, SSNRI's)
  - Benzodiazepines
  - Anti-Spasmodics
  - Anti-Convulsants
  - Non-benzo benzodiazepines
  - Atypical Antipsychotics

"SLEEP IS A PAIN" PATIENT ANECDOTES

- "I must be your toughest patient!!!!"
- "I know I sleep well cause I dream a lot"
- "If it weren't for the pain, I'd sleep great"
- "Sleeping pills don't even touch me anymore"
- "I don't know why I'm even here"
- "My wife should be here….not me!"
- "It wasn't a good sleep test", I slept great at the sleep lab"

SOME RESPONSES TO SLEEP/PAIN ANECDOTES

- "Sleeping pills help you sleep through those moments when you are not breathing normally during sleep….."
- "Narcotic pain meds can sometimes help you forget to breath when you are sleeping….."
- If current hypnotic dosing is greater than the PI recommends, then you have more going on than just primary insomnia……

SOME RESPONSES TO SLEEP/PAIN ANECDOTES

- If previous escalating dosing schedules didn't work, then consider a reduction in dose! (more is not always better) and may lead to more side effects.
- Drug-centric mentality is common: "can you give me something to fix-it".....''I'm really bad".....''No,no, don't change-it....searching for the "Silver Bullet"
- The "tail is wagging the dog" scenario

FIBROMYALGIA

- 2/3 of the 15,350 Norwegian women studied were diagnosed with FM had preexisting sleep problems.
- Sleep disorders predicted the development of FM 10 years later
- Sleep Problems increase the risk, worsen the prognosis and influence the daily fluctuation in clinical pain.
- Mork PJ Sleep problems and risk of fibromyalgia. Arthritis Rheum 2012;64 (1) 281-284

LOTS OF PAIN AND NO SLEEP

ONGOING CHALLENGES

Paradoxic insomnia or "sleep state misperception"

Patients state they sleep terribly, but actually their sleep is far better than their perception!

Most commonly seen in insomnia and fibromyalgia patients.

"Paradoxic sleep"or "I don't have a sleep problem" Patients state they sleep just fine, but actually their sleep is far worse than their perception!

Most commonly seen in SA and PLMD patients. ?impact on neurocognitive function and collusion by hypnotics & pain meds.

PAIN→SLEEP SLEEP→PAIN

Sleep Disorders

CBT

Pain and Psychophysiologic Type

Insomnia→Pain
Pain→Insomnia

Sleep hygiene & environment

Meds, drugs & substances

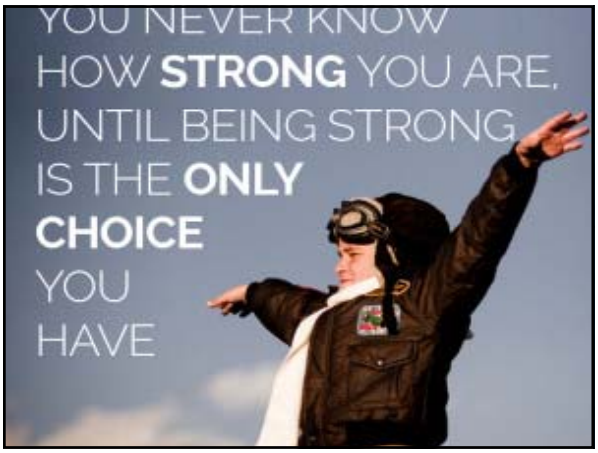
COGNITIVE BEHAVIORAL THERAPY

- Learning how to initiate sleep.....finding ***alpha*** again.
- Organized, perfectionist, worrier, list maker and natural leader.
- Neurocognitive impairments often impair the CBT process and requires an effort to find some leverage or clinical scenarios to help motivate someone to take action and stop worrying.

ACT -1 Acceptance and Commitment Therapy serves to improve sleep using mindfulness and acceptance-based approaches
Ung, Ulmer, Manber Behavorial Res Ther 2012 Nov.

- Part of the therapeutic goal is to alter, then gradually modify their own label from "I'm a pain patient" to "I have a sleep disorder that is interfering with my pain management!" – thus shifting their paradigm towards wellness, not victim.

YOU'D BE SURPRISED WHAT LENGTHS PEOPLE WILL GO TO NOT FACE WHAT IS REAL AND PAINFUL INSIDE THEM.



PAIN→SLEEP SLEEP→PAIN

CBT

SleepDisorders

Insomnia→Pain
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Sleep hygiene & environment

Meds, drugs & substances

SLEEP DISORDERS IN PAIN PATIENTS

- Insomnia – psychophysiologic type (organized perfectionist, chronic worrier, list maker and natural leader
- RLS/PLMD (caffeine, smoking, stimulants, SSRI's, low ferritin)
- OSA (hx of snoring, witnessed apneas) "dreaming alot"
- CSA/Complex Sleep Apnea (no snoring, irregular breathing)
- Circadian Rhythm Disorders (delayed > advanced)

PAIN→SLEEP SLEEP→PAIN

CBT

Sleep Disorders

Insomnia→Pain
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IMPACT ON SLEEP OF NON PRESCRIPTION SUBSTANCES

- Nicotine– stimulate properties; ?reduces SWS.
- Caffeine-- stimulate properties; increases Stage1 and sleep fragmentation. Aggravates RLS and PLMD in susceptible individuals.
- Alcohol– relaxant; facilitates sleep initiation, and reduces REM, but increases subsequent arousals (aldehydes). Relaxes upper airway nuscles resulting in snoring or SRBD in susceptible individuals.
- Marijuana– decreases REM, increase SWS
- Diphenhydramine– sedation, long half life, rapid tolerance.
- Melatonin–chronobiotic hormone derived from pineal glands.
- Valerian-- weak GABA agonist

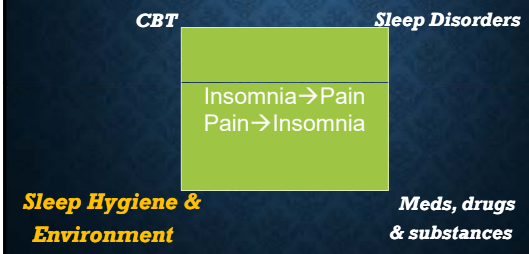
IMPACT OF MEDICATIONS ON SLEEP QUALITY

- Opiates- reduce SWS and REM stage sleep, lower threshold for obstructive and central sleep apnea in susceptible patients.
- Benzodiazepines– reduce SWS, lower threshold for SRBD; long half-life.
- Non-benzodiazepines—no impact on sleep architecture; shorter half-life.
- Sedating antidepressants- (tricyclics, SSRI, SSNRI, atypical antipsychotic) decreases total REM stage sleep and lowers threshold for limb movements in susceptible patients; long half-life for a "hypnotic".

IMPACT OF MEDICATIONS ON SLEEP QUALITY

- Stimulants—may reduce REM and Stage 2 sleep
- Alerting Agents– no significant changes in sleep architecture
- NSAIDS- no evidence of sleep quality changes
- Antiepileptic's- increase SWS and no REM effect
- Melatonin- no impact on sleep architecture

PAIN→SLEEP SLEEP→PAIN

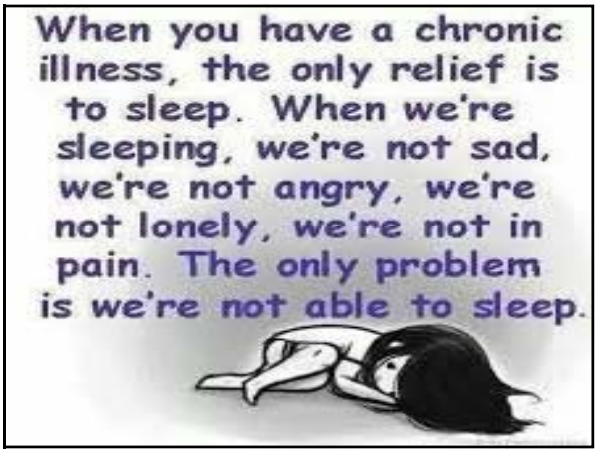


SLEEP HYGIENE ISSUES

- "Caffeine doesn't touch me"
- Impact of ambient lighting and melatonin secretion.
- TV marathons……. aka their "lucent binky"
- Wearing ear buds with vocal music.
- Texting, Tweeting, using Social media throughout the night.
- Clock watching in bed.
- Pets, dogs and other animals in bed.
- Snoring bed partner.

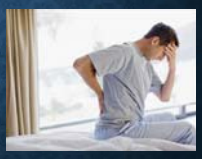
ADDITIONAL RANDOM THOUGHTS-SEESAW CONCEPT

- Patients must be reminded often of the importance of ongoing sleep hygiene efforts, (Not just to try them), but that the use of certain indicated meds and substances can, in certain patients, contribute to sleep disorders, impact sleep quality and undermine the role of CBT.
- Maintain vigilance for the common sleep disorders in pain patients.
- "the ruts that some people make"- victim position and need to repackage themselves or re brand themselves…… "pain is a part of who I am, **not** all I am!"
- "If you want something different to happen, then be open to doing something differently."



ACTUAL CASE STUDY

SLEEP IS A PAIN



A TYPICAL SCENARIO AT THE INTERSECTION OF PAIN AND SLEEP

- A patient with chronic psychophysiologic insomnia, RLS, a smoker and a drinker, who suffers with chronic pain that requires narcotic analgesics and muscle relaxants that appeared to correlate with the start of loud snoring, teeth grinding and witnessed apneas, which appeared at the same time as their insomnia and RLS symptoms appeared to improve.
- Subsequent PSG revealed OSA and CPAP titration revealed complex sleep apnea with centrals events that failed to respond to both CPAP & BiPAP therapy.
- ASV titration study was ordered, and found to be successful in addressing the CSA and OSA present.

A TYPICAL SCENARIO AT THE INTERSECTION OF PAIN AND SLEEP

- Subsequently, the RLS symptoms lessened with the reduction in caffeine/nicotine intake, but the patient was started on an SSNRI for pain, and some symptoms of RLS reemerged. Ferritin level was 30, and not >50ng/ml.
- Also, subsequently, their psychophysiologic insomnia returned…….and was managed initially with a short acting hypnotic and CBT was started in order to address both their chronic insomnia and pain issues.
- Pain patients are medically complex, requiring dynamic management especially with interrelated sleep disorders.
- PEELING the ONION in the world of "sleep and pain" usually stinks at first.

A TYPICAL SCENARIO AT THE INTERSECTION OF PAIN AND SLEEP

- Further reductions in evening pain meds (narcotic analgesics) ensued, and after many months of aggressive med management, and including injections, nerve blocks and CBT, these efforts correlated with improved daytime symptoms and sleep quality.
- Rare snoring was now reported when not wearing ASV.
- Subsequent split night study revealed the Dx of only mild OSA , which CPAP appeared to be adequate therapy. There were no Central events present and rare PLMD was noted while on Fe supplements and reduced caffeine and nicotine intake.

RECENT PAIN AND SLEEP ARTICLES

- Chronic opioid therapy contributed to significant ventilatory failure while awake and SDB in 46% of pain patients.

  Rose etal, J Clin Slep Med, Aug 2014

- Take home message: expect challenging clinical histories and sleep studies in this patient population.

RECENT PAIN AND SLEEP ARTICLES

- Increased risk of CVD events in elderly on opioid medication. Study saw significant Sleep Apnea (with ½ of the patients demonstrating CSA) which resolved following the discontinuation of opioid medication. Schwarzer etal, PAIN , June 2015.
- Take home message: expect SDB in elderly patients, who are on opioids for pain.

THANK YOU!

THANK YOU!