Help Patients Get Out of the Passive Mindset

Hans Selye is “father of stress research”

- The relationship between stress and disease
- Word ‘stress’ in physics means interaction between a force and the resistance to counter that force
- First incorporated this term into the medical language to describe the “nonspecific response of the body to any demand”
- Focused on universal patient reactions to illness

Hans Selye 1907-1982
“The Stress of Life”

• The term “stress”, as it is currently used, was coined by Hans Selye in 1936, who defined it as “the nonspecific response of the body to any demand for change”.

What does stress do?
Stress: Most Common Migraine Trigger

Stress and Your Emotions
- Frightened
- Angry
- Sad
- Restless

Stress and Your Thoughts
- Trouble making decisions
- Feeling confused
- Not wanting to think about anything

Stress and Your Actions
- Losing your temper
- Crying
- Leaving the situation
- Going to bed

What is the most common trigger for headache?

Stress → Increased CGRP

CGRP = Calcitonin Gene-Related Peptide

No migraine → CGRP increased in migraine
Balance between Sympathetic Parasympathetic system (gas and brake)

Parasympathetic “Brake”

Sympathetic “Gas”

Threshold for migraine

- Help balance a hypersensitive nervous system
- May raise the threshold for migraine attacks

Treatment Options

- Medications
- Supplements
- Nutrition therapy
- Exercise therapy
- Neuromodulation
- Massage Therapy
- Physical Therapy
- Stretching
- Ergonomics
- Heat/cold
- Acupuncture/Acupressure
- Yoga/Tai-Chi
- CBT

Cognitive Behavioral Therapy (CBT)

Addresses both thoughts and behaviors:
- How more or under activity can make their pain worse
- Sleep pattern
- How pain impacts mood and vice versa
- Alternates nonpharmacological methods to address their pain
- Identifying cognitive distortions ( ANT s)
- Develop alternate helpful thoughts and behaviors
Cognitive Behavioral Therapy for Pain

- Involves challenging false/unhelpful beliefs and behaviors
- Requires interaction between provider and patient
- Requires homework between sessions

Example Headache Diary

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Headache</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Breakfast</td>
<td>Mokelle</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Nap</td>
<td>Mokelle</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Lunch</td>
<td>Mokelle</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Exercise</td>
<td>Mokelle</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>Dinner</td>
<td>Mokelle</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Movie</td>
<td>Mokelle</td>
</tr>
<tr>
<td>8:00 PM</td>
<td>Bed</td>
<td>Mokelle</td>
</tr>
</tbody>
</table>

CBT for Headache

- CBT reduces physical symptoms and medication use associated with headache
- May reduce stress level by 4-12%
- Seems more effective in combination with relaxation, medication
- CBT may be given individually or in groups
- No CBT apps for headache at this time

Who came up with the term CBT?

Aaron Beck 1960s

Some people having negative bias in looking at certain life events

Beck called his therapy “cognitive therapy” because thinking is involved in this Rx

What is CBT?

Cognitive behavioral therapy (CBT) is a goal-oriented behavioral treatment that takes a hands-on, practical approach to problem-solving.

Its goal is to change patterns of thinking and behavior that are behind people's difficulties, and so change the way they feel.


Why CBT?

- Many people with chronic headache are resistant to medications, have side effects or prefer not to take medications
- We want to give people tools to have other Rx
- Other Rx work better in conjunction with CBT

How often do I have to practice CBT?

- Practice at least once a day
- 10 to 20 minutes each time
- During this practice it will be just like physical exercise
- The reflexes get stronger with training
- You have resilience built into you to help you deal with the world around you

Foundational technique of CBT

- CBT will build a set of skills that enable us to be aware of thoughts and emotions
- CBT identifies how situations, thoughts, and behaviors influence our emotions
- CBT improves feelings by changing our “painful” thoughts and behaviors
- We learn skills to address the problem
Skill one-setting realistic goals

New skill: change self-talk

New Skill: Pain Self-efficacy

What works: Goal setting

SMART

Specific Measurable Attainable Relevant Time Based

Catastrophizing

- "I will never get better, the pain is unbearable"
- "I have the tools to get better and this will improve"
- "CBT will not help me"
- "I will master CBT and this will help me"
- "no one can help me"
- "I can help myself with the help of others"

Pain Self-efficacy

- Answer-Seeking. When we are unwilling to accept that a source of pain cannot be determined, it can cause high distress and increase pain intensity.
- Pain Self-efficacy. We can reconceptualise headache and other pain and move from a view of pain as purely sensory/biomedical to more multidimensional—function of the brain.
I can cope with my pain in most situations.
I can do some form of work, despite the pain.
I can still do many of the things I enjoy doing, despite the pain.
I can cope with my pain without medication.
I can still accomplish most of my goals.

New skill: Evaluate Interpersonal Relationship

- Solicitous people in our lives who are highly responsive to our pain or expressions of our behavior can increase our pain-positive reinforcement.
- Plan to increase social interactions that focus our attention away from pain and onto different topics or activities.

New skill: Add movement that decreases pain

- Guarding
- Resting/under-activity
- Overactivity
New Skill: Pacing

- Importance of movement and thoughtful approach to activities (Spring clean on a "good day")
- Use tracking logs for activity, duration, intensity, pain before, immediately after and before bed
- Increasing motivation for implementation of PT plan
- Take breaks based on how much time you have worked not on how much you have accomplished
- Take breaks before the pain begins to increase, not after it gets bad
- Practice makes perfect – your body must learn how to respond

New Skill: Relaxation

- Deep breathing (triggers relaxation response)
- Progressive muscular relaxation
- Guided imagery
- Laughter
- Pair relaxation with daily activities
- Use a relaxation “app”
- Add relaxation minutes to prevent muscle tension buildup
New Skill: Find Pleasant Activities

- Benefits of pleasant activities:
  - Distraction, improved mood, socialization, enhanced direction and efficacy
  - Make a list of pleasant activities
  - Encourage daily engagement to make life worth living despite pain
  - Encourage positive journaling

New Skill: Identify Automatic Negative Thoughts (ANTs)

- Am I using automatic negative thoughts (ANTs)?
  - Challenge the negative thought by asking
    - Is this 100% true and factual?
    - Are you using automatic negative thoughts (ANTs)?
    - Is there a different way to look at this issue?
    - What would you tell a close friend if they had this thought?
    - Is this thought helpful to me?
    - Is there evidence that I am not taking into account?

New Skill: Identify Unhelpful thinking Catastrophizing.

- “It is a tumor”
- “This will end my career and I will be unemployable.”
Emotional Reasoning
- "I am scared about what is causing the pain, so it must be bad"

Overgeneralization
- "I cannot play ball with my child anymore so I am a terrible parent"

All or Nothing
- "If I have pain, my life is miserable"
- "I am always in pain"
- "I am never comfortable"

Minimization of the positive
- "Yeah, my back is feeling better, but I'm sure it won't last"

Mind Reading
- "My kids hate me because I can't do the things with them that I used to"

Jumping to Conclusions
- "If I have pain now, I will always have pain"
Mental Filter

- "Nobody understands."

Control Fallacies

- "I have no control over my pain or the way it impacts my life"
- "If I just _____ then the pain will go away"

Automatic Negative Thoughts

- Have participants list their Automatic Negative Thoughts (ANTs) as they relate to:
  - Their pain
  - Their relationships (because of their pain)
  - The probability of treatment success
  - Their quality of life (because of their pain)

Cognitive Distortions Worksheet

Cognitive Distortions

- Overgeneralization
- Mind reading
- Jumping to conclusions
- Mental filter
- Control fallacy

CBT—Cognitive Distortions Log

<table>
<thead>
<tr>
<th>Automatic Negative Thought</th>
<th>Alternate, more helpful thought</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CBT—Cognitive Strategies

- Cognitive Strategies
- Motivational Enhancement
- Feedback
- Responsibility
- Advice
- Menu of Options
- Empathy
- Support
TAKE A MINUTE TO DO FIRST EXERCISE

20 Breaths to Feel Less Stressed

1. Notice how your body feels right now.
2. Now, slowly breathe in at a rate comfortable for you.
3. Then, slowly breathe out a little slower than you breathed in.
4. Do this 20 times.
5. Now, notice how your body feels.
We’ll try this practice now.

Psychological Factors Associated with Pain

- Catastrophization and Pain Cognitions. Negative cognitions and beliefs about pain, including catastrophizing, can lead to maladaptive coping, exacerbation of pain, increased suffering, and greater disability.
- Negative Affect.
  - Want versus Harm. When pain is interpreted as evidence of further damage to tissue, higher pain intensity.
- Chemical Coping.
- External Locus of Control.

Headache Self-Management

- Stretching
- Relaxation
- Hot/cold
- Guided Imagery
- Alternate focus
- Breathing

Trigger Avoidance

- Most migraine patients can identify triggers
- Common triggers: glare, alcohol, menstrual period, stress
- Attempting to avoid all stresses is impractical
- Often incorporated into CBT treatment

Behavioral Activation

- Increasing activity that leads to pleasurable experiences
- Decreasing avoidance behavior
- Evidence-based for depression
- Chronic migrainers are frequently very avoidant, leading to withdrawal from life
- Unclear if helpful for migraine

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Paced Exercise for Chronic Pain

**PRINCIPLES:**
- Take breaks based on how much time you have worked
- Take breaks before the pain begins to increase, not after it gets bad
- Practice makes perfect - your body must learn how to respond
- Experiment to find which exercise works best for you

Behavioral Treatments

- Biofeedback
- Relaxation Training
- Mindfulness
- Acceptance and Commitment Therapy (ACT) aims to develop greater psychological flexibility and learn to “live in the and.”
- Cognitive Behavioral Therapy (CBT) addresses thoughts, behaviors and emotions
- Hypnotherapy

**Behavioral Treatments for Primary Headache: Meta-analysis**

- Meta-analysis shows behavioral treatments significantly reduce:
  - Headache days per month
  - Number of headache attacks
  - Negative trend for headache disability
- Limitations:
  - Lumped together all headache types and all treatments

**Migraine Patient Interest in Behavioral Treatment**

- Migraine patients are interested in:
  - Smartphone apps
  - In Person Treatment
  - Less interest in:
    - Telephone treatment
    - Paying for treatment out of pocket
    - More disabled patients more motivated overall

**Barriers to Behavioral Treatment**

- Limited insurance coverage
- Mobility, childcare, time off from work
- Access to care nearby
- Opposition to behavioral treatment
- False assumptions about treatment modalities
- External LOC and lack of self-efficacy

- APA

BIOFEEDBACK
Biofeedback for Headache

- Physiological measurement:
  - Heart Rate Variability
  - Temperature
  - Muscle Activity
  - Brainwaves
- Presented graphically in realtime
- Client practices changing measurement

Biofeedback study 2020

- Headache characteristics decreased during the time of the study significantly linearly with medium to strong effects
  - duration
  - mean intensity
  - maximal intensity
- Self-efficacy rose significantly using biofeedback
- Handling of pain, the psychological disability and the disability in everyday life improved significantly using biofeedback


Biofeedback

- BFD - Non-invasive method of measurement of physiological functions
- Precise instruments measure the slightest changes of different body functions which are then in a clear and understandable manner shown in the form of feedback.
- Person gets an insight into what is going on inside the body and thus learns to change patterns of behavior to improve health and performance.
- Any changes that are wanted are rewarded, which leads to learning of the new patterns of behavior
Schwartz & Andrasik 2003

Biofeedback and Migraine study

- 62% of participants using neurofeedback reported major or total improvement in their migraines (Stokes & Lappin 2010).
- Per the study, most patients had long histories of migraines and had tried multiple pharmaceutical treatments prior to trying neurofeedback.
- Most were on medications during the study.

Biofeedback and Migraine study

- 43% are super-responders
- 27% are medium responders showing a 50% or greater reduction in the frequency of their migraines
- 16% (n=6) failed to improve at all

Biofeedback and Migraine study

- Participants took part in an average of 40 sessions over six months (~ twice a week)
- 70% (n=26) of the n=37 participants showed a 50% or greater reduction in the frequency of their migraines, and only 16% (n=6) failed to improve at all.
- Of those who improved, 62%, n=16 (43% of total) reported major or total improvement in their migraines.
Biofeedback and Headache review

• Previous meta-analytic reviews of behavioral migraine treatments have consistently shown BFB to be effective, with average improvement rates around 40%.
• Clinical reductions of migraine activity equals those of pharmacotherapies

Holroyd and Penzien, 1990

Meta-analysis of the efficacy of biofeedback in migraine

• A medium effect size ($d^* = 0.58$, 95% CI = $0.52, 0.64$) resulted for all BFB interventions and proved stable over an average follow-up phase of 17 months.
• Frequency of migraine attacks and perceived self-efficacy demonstrated the strongest improvements


Meta-analysis of the efficacy of biofeedback in migraine

• Blood-volume-pulse feedback yielded higher effect sizes than peripheral skin temperature feedback and electromyography feedback.
• Moderator analyses revealed BFB in combination with home training to be more effective than therapies without home training.


RELAXATION AND MINDFULNESS

Relaxation Therapy

• Deep Breathing
• Progressive Muscle Relaxation
• Guided Imagery
• Decreases cortisol level and sympathetic tone
• Increases sense of control
• Requires regular practice

Mindfulness Therapy

• Not just striving for relaxation
• Nonjudgmental acceptance and awareness of:
  • Oneself
  • One’s Situation
  • Headache symptoms
• Avoid direct attempts to “fight” headache
Mindfulness Treatments for Primary Headache: Meta-analysis

- Meta-analysis shows mindfulness treatments significantly reduce:
  - Headache pain intensity
  - Headache frequency
- Limitations:
  - Lumped together all headache types
  - Combined Mindfulness based CBT and Mindfulness Based Stress Reduction (MBSR)


Acceptance and Commitment Therapy (ACT) For Migraine

- De-emphasizes avoidance behavior
- Stresses:
  - Acceptance of pain condition
  - Valued living
- ACT improves primary headache-related disability and functioning
- ACT leads to increases in headache sufferers’ quality of life


Motivational Interviewing and Migraine

- Therapeutic technique originally developed in SUD field to help clients explore and overcome ambivalence to positive life changes
- Limited applicability and evidence
- Seems helpful to increase willingness to engage in behavioral treatment
- Might be helpful in addressing Medication Overuse Headache?


Integrated Behavioral Therapy for Migraine

- Combined multiple types of therapy in 7 sessions:
  - Relaxation therapy
  - Cognitive Behavioral Therapy
  - Trigger Management
- High patient ratings
- RCT study ongoing

Hypnotherapy for Headache

- Hypnosis works via the prefrontal cortex and modification of expectation
- May be similar to placebo effect
- Note that 1/3 of patients are poorly hypnotizable
- Small studies have shown robust effect for headache
- Medication-free but availability may be limited


Traditional Movement Practices

- Tai Chi attempts to restore “balance” through focus and rhythmic movement and breathing
- Shown to have many benefits, especially for seniors
- Shown to be beneficial for tension-type headache

- Yoga combines exercise, mindfulness, breathing, stretching, and more
- Short term effectiveness shown for tension type headache
- Patients may wish to pursue less strenuous form of yoga


Behavioral Treatment of Headache

- There are many varieties of behavioral treatment
- Probably under-utilized for headache
- Patients may need encouragement and help overcoming barriers
- Access, insurance coverage, adherence remain major issues


Need for Multimodal Approach

CONCLUSION
Thank You!