Behavioral Assessment in Headache Medicine

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Disclosures

- Advisory Boards: Alder, Allergan, Amgen Novartis, Biohaven, Percept, Teva, Xoc
- Speaker's Bureau: Amgen Novartis, Biohaven
- Editorial Boards: Associate Editor, Headache

Objectives

- Utilize the ABC's of behavior.
- Perform a multiaxial behavioral assessment.
- Assess adherence to pharmacological and behavioral therapy regimens.
- Evaluate stress-related factors and coping styles.
- Diagnose psychiatric comorbidities.
- Outline how anxiety sensitivity may be the driver of distress in migraine.

Case-Arielle

- 21 yo female university student 5 migraines/mo and many interictal less intense HA's. Historically 1-2 migraines/mo responsive to OTC's. Her PCP gave her sumatriptan 50 mg. Takes suma after nonresponse to asa, apap, caffeine tablets. "It doesn't work." HA frequency, intensity, disability increasing.
- Hx of depression, sleep disorder, "stressed-out," Increasing OTC's to 3-4 days/week.









ABC's of Behavior

- Antecedents: Events or triggers that precede migraine or periods of increased headache.
- Behavior: Actions taken during prodrome, headache or escalation of pain. May experience cephalalgia phobia (pre-emptive meds), or may delay taking meds, may increase or decrease activities, pain behaviors.
- **Consequents:** The impact and effect on the environment. Changes in pain or anxiety levels effects previous behaviors. Avoidance learning.

Adapted from Lake AE. Medical Clinics of North America 2001;85:1055-1074

Antecedents: "I feel like I never have enough time." Very fearful of any sensation that "may lead to a migraine." "Never a good sleeper." Stopped exercising because "I need the extra time and I get a little panicky."

Increased use of caffeine "because I'm always tired" and alcohol because "I can't relax."

Behavior: Beginning to reach "limits" on abortive medications without effectiveness. She treats fear of HA or low-grade pain with preemptive OTC's and sometimes delays triptan.

She "accelerates" behavior after taking medication to get everything done before the migraine is full-blown. "I avoid many social events....I feel overwhelmed." *Consequents:* Much discord with boyfriend. Increasing probability of CM and MOH. Missing classes. Grades "slipping".

Increasing alcohol when anxious and increasing caffeine when fatigued.

Multiaxial Assessment

- I. Headache diagnosis; frequency, intensity, duration and level of disability
- II. Assessment of adherence to therapy regimens including medication use, overuse, and misuse
- III. Factors that chronify and stress-related issues
- IV. Comorbid psychiatric disorders

Modification of Lake, 2001

Arielle

- 5-6 headaches/mo that meet criteria for migraine without aura
- Takes asa, asap, caffeine then suma 50, ineffective
- Escalating use of OTC's
- High stress, "can't cope."
- Less exercise

- Chronic insomnia
- ? Mood/anxiety disorder. Past history of depression/panic disorder in first year of college. Left for a
- semester, took sertraline, with benefit and saw psychologist.



- I. Headache diagnosis; frequency, intensity, duration and level of disability
- Migraine; 13 days of headache last month with 5 days of migraine; ? MOH; Midas score=12 (moderate disability)

Modification of Lake, 2001

Treatment Adherence Assessment Basics

- Is patient motivated for Rx? Sequence of intervention may be required.
- Does patient understand therapy rationale?
- Did patient receive adequate drug or behavioral Rx?
- Has patient adhered to past therapy regimens?
- Did medication overuse problems or emotional distress affect outcome?
- At what point does patient medicate?
- Ask open-ended questions. "How do you decide when to take your medication?"

Cheng MKS. Psychiatr Clin N Am. 2007;30:157-166

Do clinical features influence adherence?

- No significant association between adherence and sex, age, or educational level.
- Neither attack frequency, duration of attacks, degree of recovery between attacks nor cardinal symptoms during attacks were significantly associated with adherence.
- Even a problem with severe migraine

Linde M, et al. Acta Neurol Scand. 2008;118:367-372; Hedenrud T et al. Ann Pharnacother. 2008;43:39-45; Evans R, Linde M, Headache 2009;49:1054-1058

Stress-Related Factors

- High levels of daily stress may transform to chronic
- "Let-down" post-stress may be migraine precipitant.
- The effect of stress greater in migraine patients with co-morbid depression.
- In victims childhood maltreatment, more disabling HA's and more likely to "transform" from episodic to chronic
- Many patients do not have the coping skills necessary to manage stress or recurrent headache.

DeBenedittis, et al, 1990; Chabriat, et al, 1999; Holm, et al, 1997; Scher, et al, 2003; Bigal & Lipton, 2006; Scher, et al, 2008; Drummond & Passchier, 2006; Hung, et al, 2008; Lipton RB, Buse DC, et al, 2014; Tietjen and Peterlin, *Headache* 2011;51(6)869-979; Peterlin BL et al, *Headache* 2011;51(6)860-869.

Self-Efficacy

- Patients belief in the ability to control the headache
- Belief in the ability to manage emotional reactivity to pain and to other distresses
- Believe that they can achieve functionality in the presence of a significant headache disorder
- Headache Management Self Efficacy Scale

Locus of control

- Internal= perception that life events and circumstances (headache) are the results of one's own actions, a sense of control
- External= perception that life events and circumstances are beyond one's own control. Reliance on fate, chance, other people.
- Headache Specific Locus of Control Scale

Psychiatric Comorbidity

- May complicate differential diagnosis
- Non-adherence with treatment regimens 3 X more likely if suffer from a mood or anxiety disorder
- · Poorer drug tolerability
- · Reduced response to pharm and behavioral Rx's
- May increase risk of relapse
- Is a risk factor for migraine chronification

Baskin SM. and Smitherman TA. Neurol Sci. 2009;30:S61-S65; Blanchard et al., 1985; Guideti et al., 1998; Horboyd et al., 1988; Radat et al., Cephalalgia. 2005;25:519-522 Lanteri-Minet et al., 2005; Bigill ME, Lipton RB 2006; Miceliet et al., 1985; Mongini et al., 2003 Waldre & Poulton, 2002; Scher, et al 2008

Screening Tools

- Beck Depression Inventory-II (BDI-II)
- Quick Inventory of Depressive Symptomatology (QUIDS-SR)
- PRIME-MD
- PHQ-9, PHQ-2
- MMPI (self report with validity scales)
- GAD-7
- PTSD Checklist-Civilian Version (PCL-C)

Maizels M, Et. Al. A review of screening tools for psychiatric comorbidity in headache patients. *Headache* 2006;46(S3):S98-S109.

Comorbid Psychiatric Disorders

Prognosis for Refractory Headache 8-year follow-up of adolescents & young adults N=100

Multiple	57% same or	29%	14%
disorders	worse	improved	HA-free
Single	15% same or	46%	39%
disorder	worse	improved	HA-free
No psych	7% same or	53%	40%
disorder	worse	improved	HA-free

Guidetti V, Galli F et al: Cephalalgia 1998;18:455-462













han grown to service	Nine Symp	tom Chec	klist		2 10 10 1		
Over the past 2 weeks, how bothered by any of the follow	often have you been wing problems?	Not at all	Several days	More than half the days	Nearly every day		Cut Curra (2)
1. Little interest or pleasure i	n doing things	0	1	2	3	Installe	Cut Store of 5 -
2. Feeling down, depressed,	or hopeless	0	1	2	3	be to be	Sensitivity of 65%
3. Trouble failing or staying a	asleep, or sleeping too much.	0	1	2	3	2010/01/01	Specificity of 90%
4. Feeling tired or having litt	le energy	0	1	2	3	A Contract of Cont	re: Major Depressio
5. Poor appetite or overeatin	g	0	1	2	3	as comb	
 Feeling bad about yoursel failure or have let yourse 	f - or that you are a If or your family down	0	1	2	3		
Trouble concentrating on the newspaper or watch	things, such as reading ing television	0	1	2	3	and a large	
 Moving or speaking so slo could have noticed? Or fidgety or restless that yo arrested a lot move than a 	why that other people the opposite - being so ou have been moving			,		l oteneti Doroni a	
9. Thoughts that you would	be better off dead or of	de tanto	AF ROHM	with our swith	contraction where	taba-one	
hurting yourself in some	way	0	1	2	3		
man english tojem av	d 2 or greater do not be	(For office co	xting: Total Sc	ore -	s berline	+)	
If you checked off any proble home, or get along with oth	erns, how <u>difficult</u> have these p er people?	problems max	de it for you to	do your work,	take care of	things at	
Not difficult at all	Somewhat difficult	Very d	sifficult	Extremely d	ifficult		
			a l'étérence	0			
From the Primery Care Evaluation of Mo Williams, Kari Krotecke and colleagues. J	etel Dianders Petieet Health Questionnals er senarek information, confact Dr. Spilter sinder	e (FRIME-MD FM al risf@colambia.n	(). The PHQ was de do. FRIME-MD* is	teleped by Des. Raber a traderanti of Pface I	L. Spitter, Javet B Inc. Copyright" 191	UW 19 Fylan Jac	

Psychological Assessment for Depression

Behavioral assessment to evaluate the behavioral deficits and excesses associated with depression (e.g., low activity level, frequent complaints, poor social skills, etc)

Interpersonal issues that may be contributory (e.g.,loss of relationships, frequent discord, low assertiveness)

Cognitive assessment evaluates distorted depressive automatic thinking, maladaptive assumptions, and negative schemas that are intervention targets

Predictors of Bipolarity in Depressed Patients

- · Psychotic symptoms
- Family history of bipolar disorder
- Early age of onset (before 25 years of age) and high frequency of depressive episodes; post-partum episode
- High frequency of suicidal thoughts
- · A quicker onset or improvement of symptoms
- Pharmacologic-induced mania or hypomania; poor response to antidepressants
- "Rapid cyclers" migraine prone
- Hypersonnia, psychomotor retardation, profound fatigue, "leaden paralysis." overeating found in some studies.
- Distractibility, irritability, agitation; depression with mixed features (co-occurring mania) worse prognosis

Frye MA. N Engl J Med 2011;364:51-59; Dervik, et al. Eur Psychiatry 2015;30:106-13. Minen, MT, et al. J Neurol Neurosurg Psychiatry 2016;87:741-749.





Association Between Migraine and Anxiety: Community Studies

	Odds Ratio					
Reference						
	Panic	GAD	OCD	Phobia		
Breslau (1998)						
migraine with aura	10.4	4.1	5.0	2.9		
migraine w/o aura	3.0	5.5	4.8	1.8		
Swartz et al (2000)	3.4		1.3	1.4		
Breslau et al (2001)	3.7					
Merikangas et al (1993)	3.3	5.3				
McWilliams (2004)	3.6					
Saunders et al (2008)	3.6					
Wang et al (2007)	6.6 (chro	onic migraine)				

Anxiety Disorders

Symptoms common to most all anxiety disorders:

- Anxiety-related and danger-related cognitions (fear or worry)
- · Physical symptoms
- Avoidance behaviors (some are very subtle).
- Overestimate the probability of danger (migraine) and perceive it as more unmanageable and threatening than objective reality. Very sensitive to medication side effects and somatic sensations.

Smitherman TA, et al. Headache 2013;53:23-45

Anxiety Disorders

- Onset of anxiety generally precedes the onset of episodic migraine, whereas the onset of major depression follows the onset of migraine. Anxiety may appear in childhood, followed by migraine then depression then by CM.
- The lifetime prevalence of anxiety disorders in migraineurs (ranging from 51-58%) is almost twice that of major depression.
- Anxiety disorders may complicate migraine more than depression with greater long-term persistence, greater headache-related disability, and reduced satisfaction with acute therapies. Anxiety is the driver of distress across most emotional disorders.

Merikangas, et al, 1990; Mercante, Peres, et al, 2011; Breslau et al, 1991; Breslau et al, 1998; Lipchik, 2005; Swartz et al, 2000; Baskin, Lipchik, Smitherman, 2006; Smitherman, Penzien, Maizels, 2008; Lanteri-Minet et al, 2005; Smitherman, et al, 2013

Generalized Anxiety Disorder

- A. Excessive anxiety and worry occurring more days than not for at least 6 months.
- B. The individual finds it difficult to control the worry.
- C. Anxiety and worry are associated with three or more of the following:
- Restlessness or feeling keyed up on or edge. Easily fatigued
- Difficulty concentrating or mind going blank.
- Irritability
- Muscle tension
- Sleep disturbance

GAD-	7			
Over the <u>last 2 weeks</u> , how often have you been bothered by the following problems? (Use "+" to indicate your answer)	Not at all	Several days	More than half the days	Nearly every da
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	з
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling alraid as it something awful might happen	0	1	2	3



PHQ-4				
Over the <u>last 2 weeks</u> , how often have you been bothered by the following problems? (Use "\screw" to indicate your answer)	Not at all	Several days	More thar half the days	¹ Nearly every da
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Little interest or pleasure in doing things	0	1	2	3
4. Feeling down, depressed, or hopeless	0	1	2	3



Panic Disorder DSM-5 Diagnostic Criteria

A. Recurrent unexpected panic attacks. A panic attack is an abrupt surge of intense fear or intense discomfort that reaches a peak within minutes, and during which time four (or more) symptoms from a list of 13 physical and cognitive symptoms.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.)

Panic Disorder DSM-5 4 or more of a list of 13 symptoms

11 Somatic Symptoms

- Pounding heart
- Sweating
- Shaking/trembling
- · Sensations of SOB
- Feelings of choking
- Chest discomfort
- Nausea/abdominal distress
- Feeling dizzy, unsteady
- Paresthesias
- Chills or heat sensations
- Derealization or depersonalization
- 2 Cognitive Symptoms
- Fear of dying
- Fear of losing control or "going crazy"

Panic Disorder DSM-5

B. At least one of the attacks has been followed by one month (or more) of one or both of the following:

1. Persistent worry about additional panic attacks or their consequences (losing control, "going crazy", having a seizure, etc.)

2. A significant maladaptive change in behavior related to the attacks (such as avoidance of exercising or unfamiliar places)

Agoraphobia

- · Anxiety about being in situations related to perceived inability to escape or get help if a panic attack occurs
- · Situations are avoided or endured with significant distress (zone of comfort gets narrower over time)
- · Approximately one-third to one-half of individuals with PD in community meet criteria for agoraphobia. Ratio much higher in those seeking treatment. Female preponderance as agoraphobia worsens.

Thyer, Himle, et al, 1985. Comprehensive Psychiatry; 26:208-214;Craske MG & Barlow DH, 1989. Clin Psy Rev;8:667-85

Screening questions

- Do you currently have times when you feel a sudden rush of intense fear or discomfort?
- In what kinds of situations peak level? do you have these feelings? Do they ever come "from out of the blue," for no apparent reason?
- How long does it usually take for the rush of fear to reach its peak level? How long does it last at this
 - In the last month, how fearful have you been about having another panic attack? (0-8 scale)

Adapted from Anxiety Disorders Interview Schedule-Fourth Edition (ADIS-IV)

Anxiety Sensitivity

- Tendency to notice and fear benign physical sensations due to beliefs that these sensations will have harmful and have possibly catastrophic consequences.
- Positive correlation between anxiety sensitivity and brain activation in anterior cingulate cortex (ACC), medial prefrontal cortex (mPFC) and insula.
- Predicts fear of pain and maladaptive avoidance behaviors in migraine patients.
- Associated with more frequent and disabling headaches as well as greater susceptibility to headache triggers. May be relevant to people with epilepsy, MS, vertigo.

Smitherman TA, et al *Headache* 2013;53:23-45; Norton PJ &Asmundson CJG, *Pain* 2004;111:218-223; Poletti S, et al. *Psychiatry Res.* 2015 Aug 30;233(2):95-101.

Pain Catastrophizing

When I'm in pain ...

- Catastrophizing is "an exaggerated negative mental set brought to bear during actual or anticipated painful experience" (Sullivan et al., 1995).
- Helplessness, rumination, magnification.
- Individuals who tend to "catastrophize" experience higher levels of psychological distress, poorer physical functioning, increased disability, greater levels of pain intensity, pain chronification.

Number Statement Ratin 1 I wary all the ther the pain will an I field coult go on. It's terrible and I flaid it's server poing to get any It's awful and I first that it overwhelme the 1 I feel Louit must a manage 6 Ekop thiking of other printed evens 8 I activally want for pain to go away I can't sense to keep it one of any mind I keep thinking short here much it includes 18 11 Elong-finishing about how hadly 2 want the pain to step 12 There's sorthing 2 can do to soluce the intensity of the pain I wonder admit 11

Sullivan ML, et al. Psychol Assess 1995; 7: 524-532; Holroyd KA, et al. Cephalalgia. 2007 Oct;27(10):1156-65. Bond DS, et al. Headache 2015; 923-933; Kennadur B, et al. Clin J Pain 2018 Jul;47(1):838-649; Alvarez-Astorga, et al. Neurologica 2019 Mar. 8, pii: 5021-8455(1):930015-5;

Distorted Automatic Thoughts

- Fortunetelling: "I'll have an attack, I'll lose control...I'll faint
- Labeling: "I am crazy...I am sick"
- Overestimate of danger: "There was red wine in that sauce...I'm sure I'll get a migraine"
- Catastrophizing: "This will be the big one."
- Mind reading: "People know I'm losing it"
- Underestimate coping skills: "I can't handle this"

Leahy, et al 2012; Clark DM, Behavior Research and Therapy 1986;24:461-70

Maladaptive Assumptions

- " I need to be completely panic free (headache free)"
- "Having panic (migraine) is intolerable."
- "All of these medications have horrible side effects."
- "If I worry about it, I might prevent it. I need to figure out all possibilities"

Dysfunctional Schemas

- Vulnerability to harm: "I am fragile. I get easily distressed. I am helpless managing panic (these headaches)."
- Biological integrity: "I'll become debilitated."
- **Control**: "I need to always be in control. This uncertainty is unbearable."
- Specialness or humiliation: "How can someone so competent get so many HA's." "Everyone at work is making fun of me."

Vulnerability factors in panic disorder that may be relevant to migraine

- Genetics and Temperament (neuroticism, harm avoidance)
- Early developmental experiences leading to a diminished sense of control

- history of medical illness, childhood maltreatment

Craske MG & Barlow DH, 2008; Pollatos O, et al Journal of Anxiety Disorders 2007;21:931-943; DeCort DC, et al Behav Ther 2012; 43:203-25; Bouton ME, et al Psychological Review 2001;108:432. Kossowsky, et al Am J Psychiatry 2013;170:768-781; Farris SG, et al. Headache 2019;59:1212-120.

- Interoreceptive Awareness - An individuals sensitivity to bodily signals,
- e.g. heart rate • Anxiety Sensitivity - Tendency to fear benign physical sensations due to beliefs that these sensations will have harmful and possibly catastrophic consequences. Linked to migraine severity in women.





Psychiatric Disorders in MOH

DSM-IV Dx	Precedes MOH	Follows MOH
First episode of MDD	76%	24%
Panic disorder	79%	21%
GAD	80%	20%
Social phobia	100%	0%
Substance abuse	89%	11%

PTSD, childhood maltreatment, adult abuse

- Migraine appears to be related to childhood maltreatment, in particular emotional abuse.
- PTSD more prevalent in migraineurs compared to population at large.
- Headache in abused is more disabling and more likely to "transform" from episodic to chronic
- Childhood maltreatment was more common in women with migraine and comorbid major depression than in those with migraine alone
- The presence of PTSD may increase disability substantially.

Tietjen GE, et al. Headache 2017 Jan, 57(1):45-59; Tietjen GE, Buse DC, Collins SA. Curr Treat Options Neurol. 2016 Jul; 18(7):31 Tietjen GE et al. Headache 2007;47:857-865; Tietjen GE, et al. Neurology. 2007;69(10):959-968; Tietjen and Peterlin, Headache 2011;51(6)869-979; Peterlin BL et al, Headache 2011;51(6)860-869.



The ultimate in emotional dysregulation

- In primary care, 4X the prevalence than in the general population; BPD are frequent users of general medical care. 10% of all psychiatric outpatients.
- Suicidal gestures, selfinjury and unstable relationships most useful for correct diagnosis.
- Suicide risk 20-50 X higher than general population.
- More likely to have more pervasive HA
 PD's affect 26% of
- PD's affect 26% of inpatients with refractory CM (most BPD).
 More HA related
- More HA-related disability
- Lower probability of responding to standard preventative pharmacological therapy
- More prone to medication overuse

Lake A, et al. *Headache*, 2009; Rothrock, et al. *Headache*, 2007 Leichsenring F, et al. Borderline Personality Disorder. *Lancet* 2011;377:74-84.

Axis I	Axis I	Axis I		
Major Depression	Major Depression	Major Depression		
	Panic Disorder	Panic Disorder		
Axis II	Axis II	Axis II		
No disorder	No disorder	Borderline personality		
Axis III	Axis III	Axis III		
Episodic migraine	HF Episodic migraine	Chronic migraine		
		MOH		



Process of Change

- Identify patients' readiness to change
- Set stage-based treatment goals
- Accept that a sequence of interventions will be required
 - Within a given visit
 - Over a series of visits
 - Motivational Interviewing
 - Continuous behavioral assessment

Prochaska JO, et al. In: Health behavior and health education. Jossey Bass; 1997 Prochaska JO, et al. In: Patient education: A practical approach. Sage Publications; 2001

Behavioral assessment conclusions for the busy headache specialist

- Evaluate ABC's of behavior, adherence issues, stress-related risk factors, coping skills and psychiatric comorbidities while taking headache history.
 Use a headache diary for self-monitoring and to maximize adherence.

- adherence.
 Diagnose comorbid psychiatric disorders that are prevalent in migraine, most notably in chronic forms.
 Anxiety confers greater negative impact than depression in migraineurs and predicts long-term migraine persistence so needs to be carefully assessed.
 With mood issues, anxiety, somatization, abuse, consider PTSD and personality disorders.
 The possibility of bipolar disorder needs to be evaluated.