



What's New in Pediatric Migraine?

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Objectives

- Describe the differences between migraines in pediatric patients and in adults
- Determine which pediatric patients with migraine need imaging
- Describe the expected benefit and possible side effects of migraine prophylaxis medications



Outline

1. Clinical presentation of pediatric migraine
 - Symptoms
 - Typical clinical course
 - Imaging?
2. Review migraine prophylaxis in children and adolescents
3. What's new?
 - Medications
 - NEW!** CHAMP study
 - NEW!** Update on butterbur
 - Cognitive Behavioral Therapy
 - NEW!** CBT helps



Clinical Presentation

Toddlers to grade school age

- Short (<30 minutes), frontal headaches
- Facial pallor, dark circles under the eyes
- Nausea, vomiting
- Can infer phonophobia and photophobia from behavior



Clinical Presentation

Teenagers

- More like adult migraines
- Frontal, retroorbital or 'half the head'
- Nausea/vomiting
- Phonophobia, photophobia
- Disabling
- May have an aura
 - Hemisensory loss
 - Scintillating scotoma
 - Homonymous hemianopsia



Typical Clinical Course

- Intermittent migraines
 - Triggers: stress, poor sleep, barometric pressure change, being extra hot, certain foods or smells
- Chronic daily headache
Migrainous headache >15 days a month for 3 months



Who needs imaging?



GRANGER
MEDICAL CLINIC

Who does NOT need imaging?

AAN Practice Parameter 2002

Reassuring

- Migrainous headache, especially with aura
- >6 months
- Family history of migraine
- Normal neurological exam

Consider Imaging

- Risk Factors from the AAN PP:
- Headache < 1 month duration
 - Absence of a family history of migraine
 - Abnormal neurological exam
 - Gait abnormalities
 - Seizures

My addendum: No risk factors for CSVT or pseudotumor cerebri

My addenda: Young age (<5-6 years old), hemiplegic migraine

Migraine Prophylaxis FAQs

When to start?

→ when migraines are interfering with school or home life

When to stop?

→ 3-6 months, maybe end of the school year

What medication is best?

→ the one with the least undesirable side effects

Besides medications, what else should patients be doing to prevent migraines?

→ Good sleep, deal with stress/anxiety, healthy eating, daily exercise, mindfulness



Migraine prophylaxis – my top 3

	Dose <i>Start low and go slow!</i>	Common side effects	Caution <i>Not a full list</i>
Cyproheptadine*	2-10 mg at night	Sleepiness, increased appetite	Asthma, overweight
Amitriptyline*	5-30+ mg at night (1mg/kg/day)	Sleepiness, dizziness, increased appetite	Overweight, long QT, depression, taking SSRIs
Topiramate*	25-50 mg BID (2mg/kg/day)	Dyesthesias, decreased appetite	Thin, eating disorder, depression

*off-label use

*Topiramate is FDA approved for migraine in patients 12-17 years old



What to expect from medications for migraine prophylaxis

Previous studies show...

Medications decrease migraines by ~ 50%

- **not a cure**

Medication responder rate is 80-90%

- **most people get better...**



Placebo responder rate is 50% or more

...with or without medications

What's new in pediatric migraine?

- **CHAMPS** study
- Update on **butterbur**
- **CBT** helps!



NEW! CHAMPS Study

NEJM 2017

- Childhood and Adolescent Migraine Prevention Study
- Ages 8-17 years, 4 or more migraines per month (mean of 11), 361 patients randomized
- **Topiramate** 2mg/kg/day vs **amitriptyline** 1mg/kg/day vs **placebo**
– Dose escalation over 8 weeks
- Endpoint: 50% reduction in # of days of headache per month



CHAMP results

- Trial ended after the interim analysis @ 24 weeks showed futility
- Responder rates statistically indistinguishable

	Primary analysis (intention to treat)	Observed at interim analysis
Amitriptyline	52%	66%
Topiramate	55%	71%
Placebo	61%	68%



Side Effects in CHAMPS study

	Amitriptyline n= 144	Topiramate n = 145	Placebo n = 72
Fatigue*	30%		14%
Dry mouth*	25%		12%
Parasthesia*		31%	8%
Weight loss*		8%	0%
Altered mood	n=3		
Syncope	n=1		
Suicide attempt		n=1	

*statistically significant compared to placebo



CHAMPS take-aways

Most of the time, migraines improve
- **with or without medications**

Pick the prophylactic medication based on possible side effects



What's new in pediatric migraine?

- **CHAMPS** study
- Update on **butterbur**
- **CBT** helps!



NEW! CBT + Amitriptyline works

JAMA 2013 and Headache 2016

- **CBT + amitriptyline** 1mg/kg/day vs **headache education + amitriptyline** 1mg/kg/day
– Dose escalation over 8 weeks
- Ages 10-17 years, chronic migraine (>14 days per month, mean 21 days), 135 patients randomized
- Secondary analysis with **new endpoint** of 4 or less headache days per month



CBT + amitriptyline study responder rates

	CBT + amitriptyline n=64	Headache education + amitriptyline n=71
Initial study 2013 50% reduction in headache days per month		
20 weeks follow up*	66%	36%
1 year follow up	86%	69%
Secondary analysis 2016 4 or less headache days per month		
20 weeks follow up*	47%	20%
1 year follow up*	72%	52%

* statistically significant



CBT + amitriptyline study take-aways

- Headaches improve in most patients
- CBT was more helpful than headache education in patients with chronic daily headache



Summary Points

- In pediatric patients migraines are shorter and often frontal
- Most patients don't need imaging
- Migraines improve with time!
- Pick a prophylactic medication based on possible side effects
- Avoid butterbur
- Consider CBT in chronic daily headache



Thanks very much!



East Greenland



Bibliography

AAN Practice Parameter 2002
American Academy of Neurology 2002 Practice Parameter: Evaluation of Children and Adolescent with Recurrent Headaches. Neurology 2002;(59):490-498



Bibliography

CHAMP Study

Powers et al. Trial of Amitriptyline, Topiramate, and Placebo for Pediatric Migraine. N Engl J Med 2017;376(2):115-124



Bibliography

Nutraceuticals

Orr and Venkateswaran. Nutraceuticals in the prophylaxis of pediatric migraine: Evidence-based review and recommendations. Cephalalgia 2014;34(8):568–583



Bibliography

In 2015 AAN retires their 2012 Guideline that had recommended butterbur for migraine prophylaxis

<http://www.neurology.org/content/78/17/1346.full.html>

accessed March 3, 2017



Bibliography

CBT + Amitriptyline

Powers et al. Cognitive Behavioral Therapy Plus Amitriptyline for Chronic Migraine in Children and Adolescents: A Randomized Clinical Trial. JAMA 2013;310(24):2622-2630

Kroner et al. Cognitive Behavioral Therapy plus Amitriptyline for Children and Adolescents with Chronic Migraine Reduces Headache Days to ≤ 4 Per Month. Headache 2016;56:711-716


