# Pediatric Mashup: Fussy Infant and Pediatric Headache

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Skin, Bones, Hearts and Private Parts

# “….chance favors the prepared mind.”

Louis Pasteur, 1854

# Average daily crying in first 3 months?

a. 30 minutes – 90 minutes/day
b. 60 minutes – 120 minutes/day
c. 90 minutes -150 minutes/day
d. 120 minutes – 180 minutes/day

# Crying infant

- Proportion of children evaluated in an ED because of crying who have a serious underlying etiology.
- Retrospective review of all afebrile patients <1 yo. with chief complaint of crying and fussiness.
- Most common diagnosis:?????
- “Afebrile infants in the 1st few months of life should undergo urine evaluation.”
- “History and physical examination suggest a diagnosis in ????? of the cases “

Accessed 2/12/21Pediatrics March 2009, 123 (3) 841-848; DOI: https://doi.org/10.1542/peds.2008-0113



# "Whipped cream mixes"

- Produced by Evolution Control Committee
- Mix of Public Enemy, and Herb Albert, and Tijuana Brass.

Tracks:

- Reassure
- Screen
- Intervene

2 mo. female

“ She won't stop crying.”

- HPI: Paroxysmal episodes of crying lasting > 3 hrs.

Parents say seems like the child is in pain.

Occurring most days of the week.

When the infant cries her face is flushed, tense abdomen, and arching back and hard to console.

- PE: Afebrile, flat fontanelle, TM:clear, Lungs: b/l CTA, Abd: soft, NTND
- Lab: UA: unremarkable.
- Imaging: unremarkable
- Dx:?????
- Track?????

# Which of the following is the most appropriate diagnosis for this patient?

a. Colic
b. Intussusception
c. Milk protein intolerance
d. I don't know its too early in the morning




# Colic

Diagnosis of exclusion

Rule of 3's

- >3 hours a day
- >3 days a week
- Infants < 3 months old



# What colic is not!

- Child with a fever.
- Child who is losing weight or not gaining weight.
- Inconsolable at all times.

# Colic management

- Parental support:
- Rubbing, white noise
- Hydrolysate formula trial: No soy
- Probiotics?
- Simethicone?
- Herbal teas?

- HPI: Fussy infant, crying more than usual, anorexic, consolable to mom. Denies nausea, vomiting, change in stools.
- Physical Exam: Afebrile (100.0), flat fontanelle, TMs:clear, Lungs: clear, abdomen: soft, NTND, BS active x 4, uncircumsized penis
- Labs:  Thoughts?????
- Track:?????

# 3 mo. male
# "He is eating less last 12 hours ."

# Which of the following is the most appropriate lab for this patient?

a. CBC and a CXR
b. Lumbar puncture
c. No lab indicated
d. Urinalysis

# UTI treatment in infant > 1 month old and young children

- Provide adequate coverage for *Escherichia coli*.
- Consider local resistance patterns
- Uncircumcised male infants with fever: 4-8X -fold higher prevalence of UTI.
- Treatment:
- Low risk: 1st gen cephalosporin
- High risk: 2nd gen cephalosporin
- Duration:
  - Afebrile: 3-5 days
  - Febrile: 10 days



# Indications to hospitalize a child with a UTI.

- <2 months
- Clinical urosepsis
- Immunocompromised patient
- Vomiting or inability to tolerate oral medication
- Lack of outpatient follow-up
- Failure to respond to outpatient therapy.

- HPI: 2 mo male with a fever (101 F), lethargy and poor feeding x 72 hours with a history of having heterotaxic syndrome.
- PE: Febrile (102 F) lethargic, fontanel: slight bulge. TM: clear. absent nuchal rigidity, Kerning  and Brudzinski,  Lungs: clear, Abdomen: soft, NTND
- Labs:?????
- Track: ?????

# 2 mo. male "Looks sad for 3 days"



# Labs

- CBC : ANC < 4,000
- Procalcitonin: <0.5
- Blood Culture
- UA:  <10 WBC
- Urine Culture
- What about LP?

Accessed June 12, 2021: https://en.wikipedia.org/wiki/Blood_test

# Indication for lumbar puncture (LP)

- Performed after a thorough neurological examination
- Consider contraindications
- Essential that antimicrobial therapy NOT be delayed
- Indications for performing neuroimaging prior to LP



# Treatment of bacterial meningitis

- Supportive measures
- Antibiotics: Vancomycin + 3rd generation cephalosporin(ceftriaxone)
- Hearing screening
- Chemoprophylaxis

- Acyclovir?: Clinical features of HSV

# 10 yo. with a unilateral headache lasting 60 min.

- Moderate pain intensity.
- She describes object appearing smaller than they actually are in real life prior to the headache and difficulty with sound. that eventually return to normal.
- + N; denies V, photo/phonophobia.
- Family history positive for mother having migraine.


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# Physical exam

- Vitals: T: 100 F, HR: 90, RR: 12,  BP: 100/70
- Exam: Palpation of the head and neck for sinus, jaw, ocular or temporomandibular joint tenderness, thyromegaly, or nuchal rigidity are normal. TM: clear, CV: RRR, Lungs: b/l CTA, Skin is without lesions.
- Normal eye movements, normal optic disc, normal gait, DTR +2 throughout

# Diagnosis

a. Cluster headache

b. Migraine without an aura

c. Migraine with an aura

d. Tension type headache

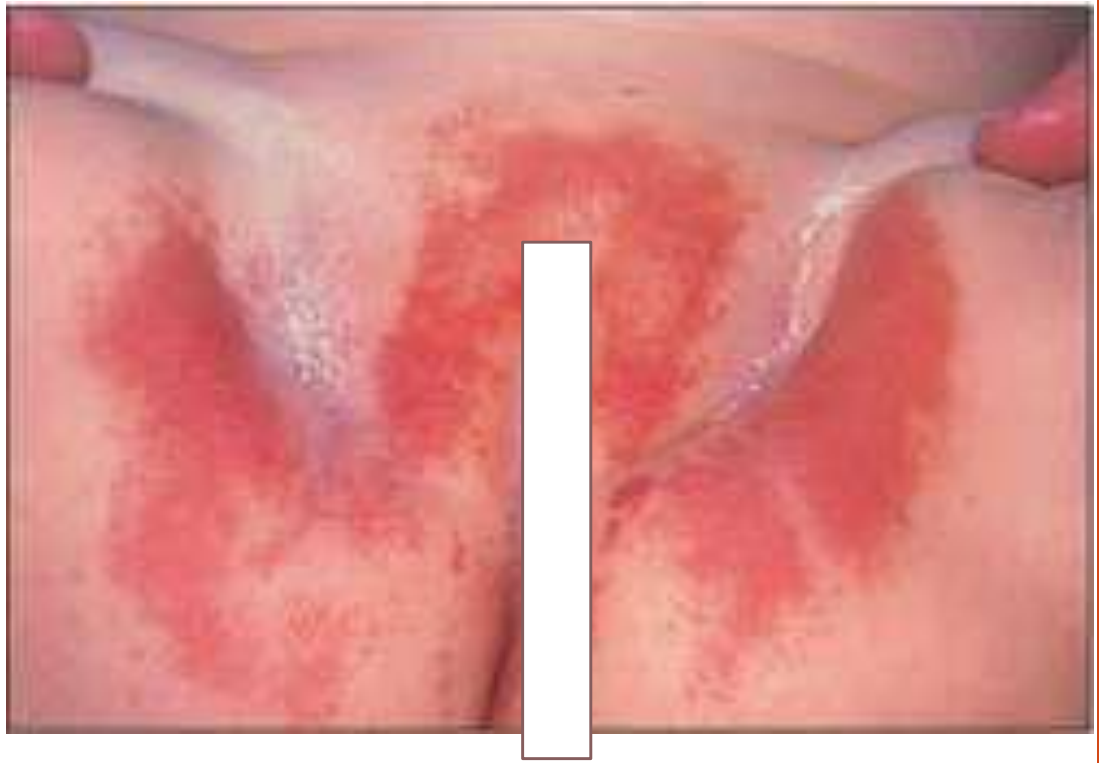
e. Headache NOS

- HPI: x 3 days with watery stools and irritable since formula change
- PE: Nontoxic, TM clear bilateral , lungs clear, abdomen soft without HSM.
- Labs:?????
- Track::?????

# 3 mo. "He is a grumpy Gus."

# Which rash is fungal?





https://kidsclinic.sg/pd-guides/parenting-tips/five-common-skin-conditions-rashes-babies-children/

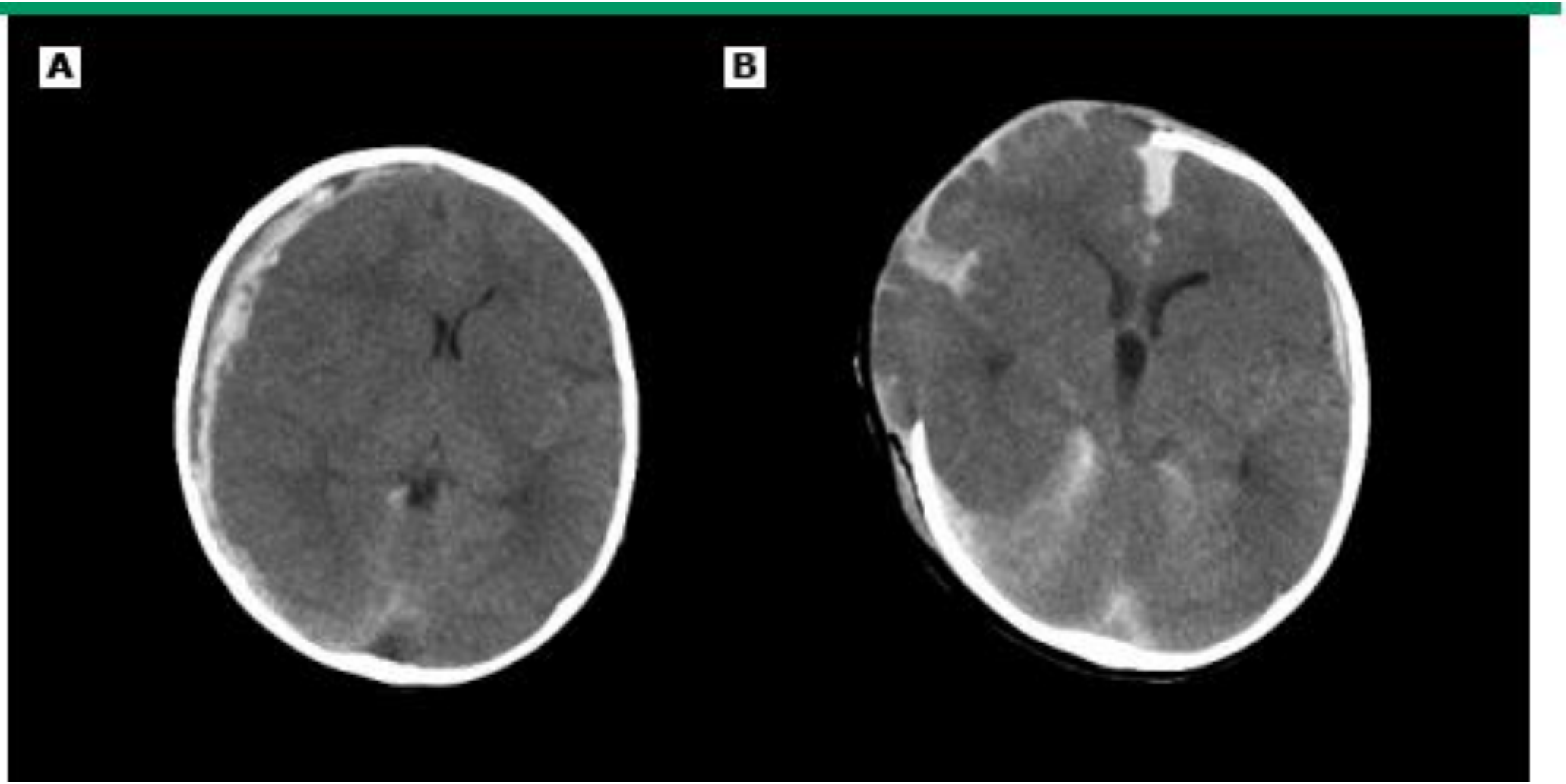
- HPI: Babysitter was changing diaper on infant when she rolled of the changing table (4 ft) and hit wood floor. +  immediate cry + vomit x2 at home. EMS called.
- PE: Afebrile, tired, large parietal scalp hematoma. TM: clear, Lungs: b/l CTA and CV: RRR, Abdomen: soft, NTND
- Labs and Imaging?????
- Track?????

# 6 mo.
# "She fell off changing table."

# Findings associated with low risk of TBI.

| |
|---|
| Normal mental status |
| Normal behavior per routine caregiver |
| No LOC |
| No severe mechanism of injury |
| No non frontal scalp hematoma |
| No evidence of skull fracture |

Accessed June 10 JAMA Pediatr. 2014 Sep;168(9):837-43.




https://www.uptodate.com/contents/intracranial-subdural-hematoma-in-children-clinical-features-evaluation-and management

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# Baby Klaus



https://www.dailymail.co.uk/news/article-1333848/US-doctors-battle-save-Baby-Klaus.html

# 4 day old with swelling to scalp



Accessed June 6: https://caputsuccedaneum.club/

# 4 day old with swelling to scalp




http://mediphotos.blogspot.com/2012/01/illustrated-cephalohematoma-vs-caput.html



# 4 day old with scalp swelling

Accessed June 11https://www.macpeds.com/documents/Subgaleal%20haemorrhage%20in%20the%20newborn_July%202018.pdf

# 3 year old with headache every AM

- Moderate pain intensity.
- Occurs in the morning upon awakening which is occipital.
- Associated with nausea, denies photo/phonophobia.
- Family History negative for HA.

# Physical Exam

- Vitals: T: 98.6 F, HR: 80, RR: 16,  BP: 110/70
- Exam: Palpation of the head and neck for sinus, jaw, ocular or temporomandibular joint tenderness, thyromegaly, or nuchal rigidity are normal. Skin is without lesions.
- + Nystagmus,  normal optic disc, abnormal toe to heel walk, DTR +3 throughout

# CT scan or MRI?

- Routine neuroimaging is not indicated in children with recurrent headaches and normal examination.
- Trigeminal Autonomic Cephalgia (TAC) is rare in children and should consider imaging for secondary causes.

# Medulloblastoma

- Most common malignant brain tumor of childhood.
- The peak incidence is in children between five and nine years of age.
- The diagnosis of medulloblastoma requires pathological confirmation at the time of surgical resection
- Age, extent of disease, histopathologic subtype, and molecular subtype are used to stratify patients with medulloblastoma into risk groups and determine appropriate therapy.

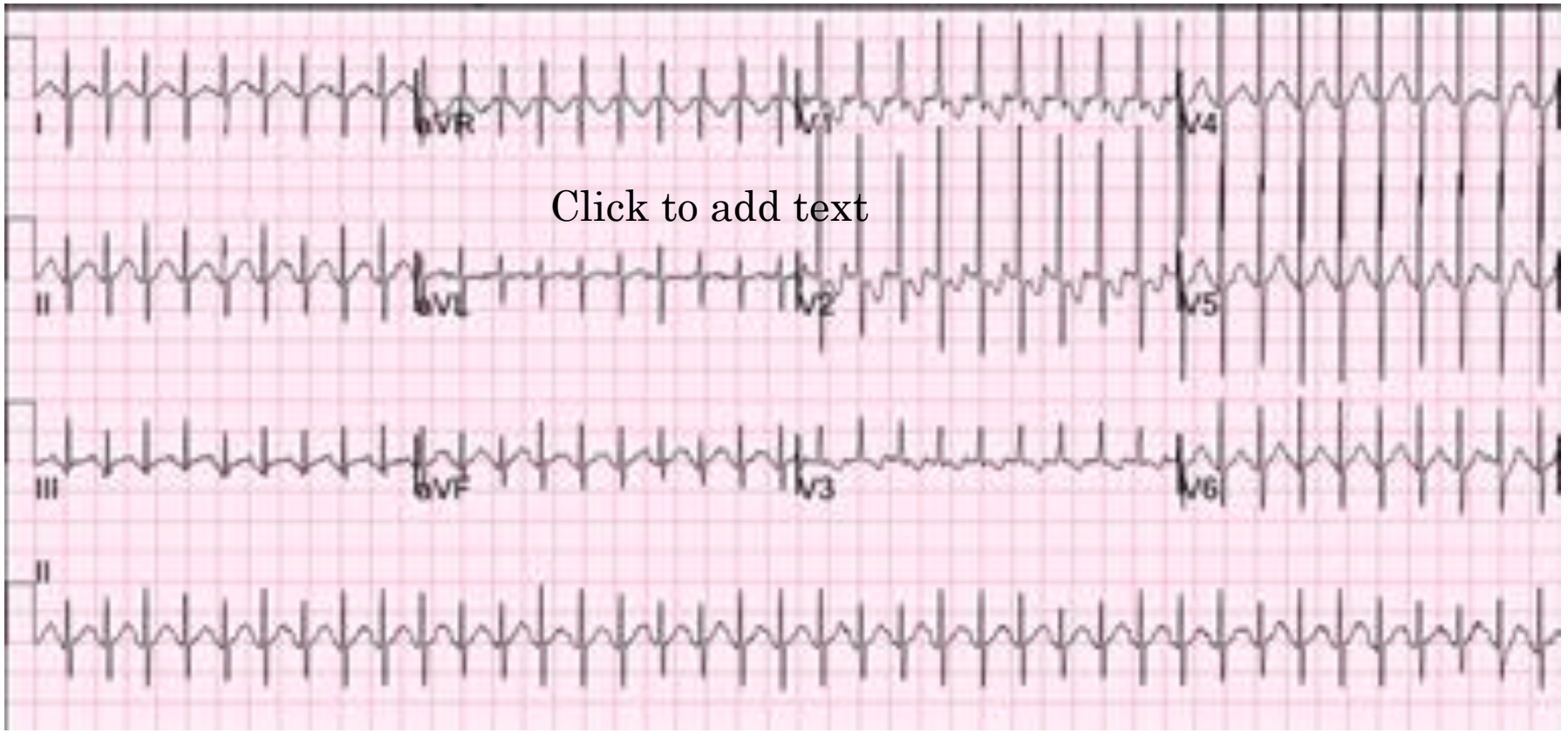
# Red flags for considering neuroimaging

1. Age < 3 years old
2. Early morning pattern
3. Worsening headache while straining, or a Valsalva maneuver
4. Explosive new onset
5. Changes in school performance
6. Underlying neurocutaneous syndrome
7. Progressive frequency and severity
8. Primarily occipital headache

- HPI: Child with poor feeding that started abruptly this morning. Denies ill contacts, fever, change in BM
- Physical Exam: Restless child, TM:clear, Heart: RRR, Lungs: clear
- Lab: UA - unremarkable
- Track?????

# 6 week old "Poor feeding starting this AM."

# EKG




Click to add text

# Which of the following diagnosis best describes this patient?

a. Atrial aberrant rhythm
b. Normal sinus rhythm
c. Sinus tachycardia
d. Supraventricular tachycardia

# SVT

- Stable vs Unstable
- Valsalva Maneuvers (Ice slurry/vagal maneuvers)
- Medication: Adenosine or other antiarrhythmics.
- Cardioversion

- HPI: spitting up after each feeding and fussy, Term birth, no complications
- PE: afebrile, calm, TM clear, lungs b/l CTA, RRR, abdomen soft, good weight gain
- Labs: None
- Track?????

# 1 mo.
# "He spits up after most feeds."

# Which of the following is an alarm symptom in a child with reflux?

a. Failure to respond to an H2 blocker
b. Dysphagia
c. 3 episodes of reflux each day
d. Nasal congestion after feedings.

# 1 mo. with vomiting and fussiness

- GER: No warning signs, good weight gain

Warning signs:

- Bilious vomiting
- Gastrointestinal bleeding – Hematemesis, hematochezia
- Consistently forceful vomiting
- Onset of vomiting after six months of life
- Abdominal tenderness, distension

# GER management

- Lifestyle changes
- Avoidance of cows milk
- Thickening feeds
- Positioning therapy
- Pharmacotherapy
  - PPI
  - H2
  - Prokinetic

- HPI: 42 week, breastfeed infant with rash to trunk and face.
- PE:  Afebrile, multiple erythematous macules and papules (1 to 3 mm in diameter) that rapidly progress to pustules on an erythematous base TM: clear, Lungs: b/l CTA, Heart:RRR
- Tx???

# 3 day old " Rash to the entire body."



# Diagnosis this rash.

Accessed June 13: https://www.uptodate.com/contents/vesicles

# Which of the following best describes the aforementioned rash?

A. Erythema Toxicum

B. Infantile acne

C Transient neonatal pustular melanosis

D. Miliria

# 9 mo. "She seems tired and can't poop"

- HPI: 9 mo with bouts of fussiness lasting 20-25 min that the child will curl the legs close to the abdomen in apparent pain and then vomit.
- PE: Afebrile, TM: clear, Lungs clear Unremarkable, diffuse abdominal tenderness and voluntary guarding, but no rebound. No HSM was appreciated. Bowel sounds were diminished
- Lab and Imaging?
- Dx:?????
- Track?????

https://radiopaedia.org/articles/intussusception?lang=gb

# Which of the following best describes the reason for the abdominal pain in this child?

a. Acute gastroenteritis
b. Intussusception
c. Meckel diverticulum
d. Volvulus

- HPI : parent noted drainage on the eys x 2 days with waking and throughout the day.
- PE: afebrile, eyes: drainage noted to the eyelashes, no conjuntival injection.  no periorbital swelling, TM: clear, CV: RRR, Lungs: b/l CTA
- Track?????

# 2 week old " Drainage from the eye."

# Which of the following best describes the reason for the eye drainage in the neonate?

a. Bacterial conjunctivitis
b. Nasolacrimal duct obstruction
c. Uveitis
d. Viral conjunctivitis

# 9 mo. " He is increasingly irritable."

- HPI: 9 month-old, previously healthy circumcised boy, presented with  irritability. Went to bed the night prior but woke up crying. He refused feeds, but had no vomiting, fevers, cough or difficulty breathing. The mother stated that the childs toe looks funny.
- PE: VSS, TM: Clear, CV: RRR, Lungs: b/l CTA, Abdomen: soft, NTND



# Which of the following best describes the reason for this lesion?

a. Cellulitis
b. Hair tourniquet syndrome
c. Ingrown toenail
d. I think I'm finally awake!

# Fussy infant mnemonic

- Infection:
- Trauma
- Cardiac
- Reaction/Reflux
- Intussception
- Eyes
- Surgical

Accessed Jan 28, 2020 https://www.valuemd.com/pediatrics_mnemonics.php

# Final thoughts

- Infection : Meningitis, UTI, candidiasis
- Trauma: NAT, head swelling
- Cardiac: SVT, CHF, Myocarditis
- Reflux/Rash: Medication, Feeding, Anal fissure
- Intussusception
- Eyes: Corneal abrasion, glaucoma, FB
- Surgical: Hernia, Torsion





# More final thoughts

- Indications to CT/MRI
- Red Flags in HA
- History of mashup music