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PODCAST TITLE

Developed by Carol Dennison and Dr. Bonnieca Islam for PedsCases.com.
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Introduction:

Hello, my name is Carol Dennison and I am a 4th year medical student at the University of Alberta. This PedsCases podcast outlined an approach to the management of infantile colic and was developed in collaboration with general pediatrician Dr. Bonnieca Islam, Associate Teaching Professor in the Department of Pediatrics at the University of Alberta in Edmonton, AB, Canada.

Objectives

After this podcast, you should be able to:

1. Define infantile colic and discuss it typically presents.
2. List the differential diagnosis for infantile colic.
3. Describe the management of infantile colic; and
4. Recognize that infantile colic puts children at risk for non-accidental injury.

Clinical Case

Let's get started with a clinical case. One morning, during your community pediatrics rotation, you notice that Joe, a 6-week-old infant, has been added to the same day appointment slot. He came to the clinic for his well-baby check when he was 2 weeks old and was doing well at that time. You remember that Joe was born at 39 weeks vaginally with vacuum assistance. He was exclusively breastfed. Prior to entering the examination room, you briefly review the chart. Joe is tracking steadily on the 60th percentile on the WHO growth charts for height, weight and head circumference.

Upon entering the room, you find Joe being held comfortably in his mothers' arms. His mother, Mari, looks exhausted, disheveled and tearful. She immediately tells you that Joe just will not stop crying. Joe started crying 2 weeks after his last appointment and it just keeps getting worse. He cries for more than 3 hours a day, almost every day. It is particularly bad in the evenings, so she is not getting any sleep. Mari is very worried that Joe might be sick.

What could be going on?

Differential Diagnosis

Before we get more information from the case, let's go through the differential diagnosis. The differential of excessive crying is very broad. Etiologies range from benign to serious underlying conditions.[1] A 2015 article in Pediatrics published a table listing potentially serious underlying conditions.[1] Remember many of these considerations are very rare and often are accompanied by abnormal laboratory investigations and red flags on history and physical examination. Diagnoses to consider, especially in the emergency room setting, include appendicitis, acute cholecystitis, congestive heart failure, acute airway obstruction, nephrolithiasis, sickle cell disease, clavicular fracture, toxic ingestion, hyperthyroidism and occult infections particularly of the urinary tract[1]. Based on what you already know about Joe, most notably that he demonstrates normal growth and development, if he has normal vital signs and has no abnormal findings on physical exam you can narrow your differential to include infantile colic, gastroesophageal reflux (GER) and constipation[2-3].

Clinical Case

Let's get back to our case. A thorough history and physical examination is an important part of the evaluation of a crying child.[1] Based on your differential diagnosis, you ask Joe's mother for more information. Overall, Joe spends more time being alert and happy than he does crying. He is not lethargic. Joe has not had any vomiting or diarrhea. His bowel movements are regular and soft. He has never had any blood in his stool. There is no family history of allergies. Mari has never noticed any rashes on his skin. There is no apparent cause of his episodes. His episodes of crying are not related to feeding and his appetite has not changed. Joe continues to be exclusively breastfed. Sometimes during his episodes, he tightens his tummy, arches his back and brings his legs up during his crying spells but again these are unrelated to feeds. He gasps in lots of air while he cries and has lots of flatulence. Mari's friend suggested she try probiotics, which she started one week ago, and she thinks they may have helped a little. She was given some gripe water at her baby shower, but she has not tried it yet.

Joe is developing normally. His can hold his head up to 45 degrees when prone, he is starting to bat at toys, he looks to see where voices are coming from and his eyes follow objects past midline. He is even starting to smile socially.

Now that you have completed your history, so you move on to physical examination.

Joe appears well. He is afebrile and his other vital signs are normal. He fusses a little during your physical exam but settles quickly. The exam is completely normal, so you step out to review with your preceptor. Your preceptor is seeing another patient, so you have a minute to think about what investigations you want to do. Joe's history and physical examination did not reveal features of any serious etiology. Had something more concerning been discovered during your history or physical examination, it would be important to review your original differential diagnosis and adjust your approach if necessary.

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You suspect that Joe has infantile colic. Colic is a diagnosis of exclusion that does not require any specific investigations.[2] Your preceptor joins you and after reviewing the case she asks you the main management of infantile colic. Confidently you respond that it is parental reassurance and supportive management.[4] Together you rejoin Joe and Mari. Mari is relieved that Joe isn't sick. You reassure her that the crying spells often peak at 6 weeks, decrease by 8 weeks and often resolve by 4 months, with the majority resolving sooner at 2-3 months.[2,4] Some supportive measures that might help Joe include holding him >3 hours per day, swaddling, motion like a swing or car rides, white noise such as a fan, hairdryer or vacuum or music, as well as non-nutritive sucking (i.e. soother).[2,4] Your preceptor explains that there is no evidence that over the counter remedies like gripe water or oval drops are effective.[4] In fact, there is concern that these types of treatment will negative impact on infant caloric intake.[2] Additionally, evidence for probiotics is also limited.[4] Maternal dietary changes is rarely effective.[4] Given that, dietary modifications are not routinely recommended and should only be recommended as 2-week trials and only if they will not hinder breastfeeding duration.[3] Finally, your preceptor gently encourages Mari to try to get some rest herself and reach out to her supports as a difficult to console baby can be extremely frustrating and emotionally draining.[4] Before they leave you provide Mari with a link to the Period of Purple Crying website[5] as it has lots of useful information for families. Mari and your preceptor plan to follow up with Joe at his 2-month well-baby check. Unfortunately, this occurs after your rotation ends.

Unexpectedly, you run into Mari and Joe at the local mall when Joe is 4 months old. Mari recognizes you and excitedly tells you Joe doesn't have crying spells anymore.

Review

While the etiology of infantile colic is unknown, it is thought to be gastrointestinal. However, it is most likely multifactorial and includes social, behavioral and neurodevelopmental factors as well.

Infantile colic can be defined by the Rome III criteria for functional GI disorders in infants under 4 months, which are:

- Paroxysms or irritability, fussiness or crying that start and stop without obvious cause,
- Episodes lasting 3 hours or more per day and occurring at least 3 days per week for at least one week, and
- No failure to thrive.[3]

As with all functional disorders it is a diagnosis of exclusion. Below I have included a table of how colic differs from other conditions on the differential diagnosis.

	Infantile Colic[2,4]	GER[2,4]	Subdural Hematoma	Lactase Deficiency[2-4]
Prevalence	16-26%	Common 50%	rare	Very rare

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Growth	Normal	FTT if severe	none	Decreased wt gain
Emesis	None	Soon after eating, no blood or bile, small volume	none	none
Diarrhea	None	none	none	Watery, acid pH
Feeding Association	none	Soon after eating	none	none
Other			Irritable/ inconsolable, other nonaccidental injuries	Abdominal pain

Providing parents with reassurance that their baby is not sick, highlighting the baby's normal growth and development and that the crying spells will decrease and eventually pass with time is an important part of management. The period of purple crying website is a useful resource to provide parents. Encourage parent to try to get rest when they can.[4] Parental exhaustion may contribute to the fact that children with infantile colic are at a higher risk of child abuse.[2]

There is no evidence to support common over the counter remedies. The use of probiotics is also currently lacking evidence.[2,4]

It is important to note that abusive head trauma is often triggered by crying.

Key Learning Points

Let's summarize some of the key learning points from this PedsCases podcast on infantile colic:

- The Rome III criteria classify colic as:
  - Paroxysms or irritability, fussiness or crying that start and stop without obvious cause,
  - Episodes lasting 3 hours or more per day and occurring at least 3 days per week for at least one week, and
  - No failure to thrive.[3]
- Another way to remember the definition of infantile colic is the rule of 3s:
  - Unexplained episodes of crying and irritability for >3hours/day, >3days/week, for >3 weeks.[2,4]
- Colic is a diagnosis of exclusion, so other conditions must be ruled out including gastroesophageal reflux, as well as any potentially rare serious underlying etiology as guided by your history and physical examination.[1-2]
- Management of infantile colic includes:
  - Supportive measures - holding him >3 hours per day, swaddling, motion like a swing or car rides, white noise or music, as well as non-nutritive sucking.[2,4]
  - Reassuring and educating parents.[2,4]

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- Recognize that infantile colic puts children at high risk of abusive head trauma.[2]

Thank you for listening to this PedsCases podcast on infantile colic. Stay tuned for more podcasts!

References

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