

PedsCases Podcast Scripts

This is a text version of a podcast from PedsCases.com on the “**Approach to Sore throat.**” These podcasts are designed to give medical students an overview of key topics in pediatrics. The audio versions are accessible on iTunes or at www.pedsCases.com/podcasts.

Approach to Sore Throat

Developed by Charissa Ho and Dr. Jessica Foulds for PedsCases.com.

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Introduction:

Hello everyone. My name is Charissa Ho and I’m a medical student at the University of Alberta. This podcast was created in collaboration with Dr. Jessica Foulds, a pediatrician and assistant clinical professor in pediatrics at the University of Alberta. This podcast reviews an approach to a child with a sore throat. At the end of the podcast, listeners will be able to:

- 1) List the differential diagnosis of sore throat in children,
- 2) Obtain a focused history of the relevant signs and symptoms in a child that presents with a sore throat,
- 3) Perform a physical exam in a child that presents with a sore throat,
- 4) Recognize the indications for further investigations, and
- 5) Discuss treatment and follow-up recommendations for common causes of sore throat.

Let’s start with a case. You are a 3rd year medical student working in a community pediatric clinic. Your preceptor asks you to see Hailey, a 6-year-old female presenting with a 1-day history of sore throat. What is your approach to this common presentation and how will you organize your history?

Definition

Sore throat is one of the most common presentations to a pediatrician or family physician’s office, and is characterized by pain in the posterior pharynx. In children who are verbal, they will complain of pain in the back of their throat, especially when swallowing. In infants or children who are non-verbal, their symptoms are often non-specific and may include irritability, difficulty feeding orally, and crying during feeds. Sore throat is often used interchangeably with pharyngitis, but technically this means inflammation of the pharynx and is a sign on physical examination. Another term you may hear is tonsillitis, which describes inflammation of the tonsils, and can be seen in many causes of sore throat.

History:

Before you begin taking a history, make sure the child is stable. Is the child toxic looking? Is the child in respiratory distress? A child that looks toxic or is in respiratory distress may require resuscitation and emergent care.

For the history of presenting illness, we first need to assess onset and duration. Was it gradual or acute? Has it been there for weeks or hours? Can the family or child pinpoint a specific event or activity that could have caused the sore throat?

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Next, assess the severity of the pain. It can be difficult to gauge the level of pain in an infant. The more pain the infant is in, the fussier, more irritable and more difficult to console he or she may be; for more information for pain assessment in pediatrics refer to the Pediatric Pain Management podcast

Next, review any associated symptoms, such as cough, fever, or dysphagia. Assess fluid intake and hydration status; prior to toilet training this will be the number of wet diapers and thereafter frequency of urination. Parents may also comment on urinary concentration or odor. As most causes of sore throat are infectious, assess if the child has had any sick contacts and whether or not the child attends day care.

After the history of presenting illness, you will want to collect a focused past medical history, including antenatal history and delivery, past and current medical conditions, immunization status, medications, allergies and developmental history.

Case

Let's return to our case. When you go into the room, you see that Hailey is sitting in her dad's lap. She appears to be uncomfortable but is not in respiratory distress, and you decide that she is not in need of emergent medical intervention and continue with your history. Hailey's dad tells you that she started having a sore throat after school yesterday. This morning, her throat was hurting so badly that she refused breakfast and has only had half a glass of juice. They have not measured a temperature but she felt warm. She has voided twice today. Hailey has numerous sick contacts; her 9-year-old brother had a cold last week, and her dad thinks something might also be going around Hailey's school. Otherwise, Hailey is a healthy 6-year-old. Pregnancy and delivery were unremarkable and she was born full term and has had no significant medical history. Her immunizations are up-to-date. She is on no medications, has no allergies and has reached all her appropriate developmental milestones.

Physical Exam

The presumptive cause of the sore throat is often diagnosed by history and physical exam. It is important to know what you are looking for when you examine a child so that your exam is focused.

First, start with general appearance. Does the child look toxic? These signs include significant work of breathing, cyanosis, and decreased level of consciousness. Second, check the child's vital signs, looking for tachypnea, tachycardia or fever. If the child's oxygen saturation is below 90%, this could suggest respiratory compromise. Remember, children's vital signs vary with age. You can refer to the vital signs podcast or the pediatric vital signs reference chart on pedscases.com for age-specific vitals.

Next, perform a respiratory exam, looking for signs of increased work of breathing, including nasal flaring, tracheal tug, use of accessory muscles, intercostal and subcostal indrawing, and paradoxical abdominal movement. Listen for a wheeze, stridor or crackles. In children with viral illnesses, stridor is a common finding as their small airways become smaller with the inflammation.

Lastly, perform a head and neck exam. This is often left until last as it can be painful and invasive. Observe for drooling. Drooling indicates upper airway obstruction, preventing the drainage of secretions. Observe the posture and comfort level of the child: Are they leaning forward to maintain a patent airway, are they uncomfortable when leaning back or laying flat? Developed by Charissa Ho and Dr. Jessica Foulds for Pedscases.com.

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Remember, do not lay a child flat if they show signs of upper airway obstruction. Next, look inside the mouth and throat. Examine the tonsils for swelling, erythema, and exudate. Also examine for swollen, tender lymph nodes.

A critical and important point is that you should not examine the throat of a child suspected to have epiglottitis unless you are prepared to intubate (which requires experienced personnel such as an intensive care physician, ENT surgeon or anesthetist). If you suspect the child has epiglottitis, the patient should be transferred to an operating or intensive care room prior to intubation.

Case

Let's return to the case. On exam, Hailey is not in respiratory distress. Her vitals reveal normal blood pressure of 90/52, slight tachycardia of 110bpm, normal respiratory rate of 30, oxygen saturation is 98% on room air, and she is febrile with a temperature of 39C. On respiratory exam, there are no signs of increased work of breathing or nasal congestion. On auscultation, you note clear lungs with equal air-entry bilaterally. Head and neck exam reveals moist mucus membranes with no drooling, swollen erythematous purulent tonsils bilaterally, and an absence of petechiae or other lesions on the palate. On palpation, you note multiple tender and mobile anterior cervical lymph nodes all less than 1cm in diameter.

Diagnosis and Treatment

Now that we have gone through history and physical exam, we can narrow down our differential diagnosis and order investigations accordingly. In this section, we will review the presentations of the common infectious causes and the emergent infectious causes of sore throat, along with appropriate investigations and treatment.

The most common cause of sore throat in children is viral pharyngitis. Children with viral pharyngitis often present with several days of rhinorrhea, cough, congestion, hoarseness, fever and a mild to moderate sore throat. Some children may have viral gastroenteritis and also present with vomiting and diarrhea. Generally, children will still be able to eat and drink but may have decreased appetite and fatigue. There will also likely be sick contacts. The course of the illness runs for approximately 7 to 10 days. On exam, children will have nasal congestion and an erythematous pharynx. They may or may not have tonsillar enlargement but tonsils will not be purulent. They may also have swollen tender and mobile lymph nodes.

There are certain viruses that present with distinct features. For example, in adenoviruses, the child may also have conjunctivitis and fever. While in coxsackie A virus, also known as hand, foot and mouth disease, you may see herpangina or small vesicular or ulcerative lesions on the posterior oropharynx.

Treatment for children with viral pharyngitis is supportive. Honey is the only treatment shown to be effective in reducing symptom severity of pharyngitis and cough but this can only be used in children over the age of one because of the risk of botulism. Other forms of supportive treatment include acetaminophen, ibuprofen, saline nasal spray, adequate hydration, and rest. Parents should be advised against using over-the-counter cough and cold medications as they are ineffective, and could cause more harm than benefits.

Group A streptococcal pharyngitis is the next most important cause of sore throat. Streptococcal pharyngitis presents with acute onset of fever, moderate to severe sore throat, lymphadenopathy, and malaise. Younger children may have abdominal pain, nausea and

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April 16, 2016

vomiting. The child will not have symptoms of URTI such as cough and congestion. It is most commonly seen in children 3-14 years of age and rare children under three. On exam, the child may be tachycardic due to fever, dehydration, or pain, and should have documented fevers. The rest of the exam will be unremarkable aside from anterior cervical lymphadenopathy and enlarged tonsils that are erythematous with/without exudate.

The mainstay for investigation of streptococcal pharyngitis is a throat swab. Not every child who presents with a sore throat needs a throat swab as ten percent of people are carriers of group A strep. Therefore, symptoms must be concerning for strep pharyngitis to minimize false positives. In a child with symptoms suggestive of viral pharyngitis, there is no need to swab. In cases that are less clear, there are validated risk assessment tools that can be used to determine whether a child requires a throat swab or antibiotic treatment. A reference for one score is included at the end of this podcast script. Ultimately, absence of cough, abrupt onset fever and presence of tonsillar exudates with swelling should prompt a throat swab. When in doubt swab WAIT before initiating antibiotics. Of note, a good throat swab is a vigorous swab of BOTH tonsils and the posterior pharynx.

If a throat swab returns positive with group A streptococcus in a child with clinical signs of strep pharyngitis, he or she requires a 10 day course of penicillin or amoxicillin. The main reason to treat strep pharyngitis is to reduce the risk of complications and waiting 1-2 days for a swab result does not impact occurrence rates.

Children with strep pharyngitis may develop two types of complications: suppurative meaning pus-forming, or non-suppurative. Suppurative complications include tonsillopharyngeal cellulitis or abscess, otitis media, meningitis and brain abscesses. Non-suppurative complications include scarlet fever, acute rheumatic fever and post-streptococcal glomerulonephritis.

Scarlet fever may present with a sandpaper papular rash and a strawberry tongue along with a sore throat. Acute rheumatic fever presents several weeks following the initial symptoms, with features of arthritis, cardiac inflammation, CNS involvement, subcutaneous nodules, fever and rash. Rheumatic fever historically was a common cause of valvular heart disease, however incidence has significantly reduced with the introduction of antibiotic therapy.

Poststreptococcal glomerulonephritis generally presents 1-2 weeks following onset of pharyngitis. The child will present with cola-coloured urine, periorbital edema, malaise, and decreased appetite. Treatment for poststreptococcal glomerulonephritis is beyond the scope of this podcast but it is important to note that treating Group A Strep pharyngitis does not prevent the complication of glomerulonephritis so to be aware of this in counseling and follow-up.

Some patients will develop recurrent strep throat infections. In the past, these patients were readily referred for tonsillectomy but more recent evidence suggests that a child should have repeated confirmed strep infections before the benefits outweigh the risks of surgery. Far fewer children people are getting tonsillectomies today than before, but parents will still often request surgery. Current guidelines recommend tonsillectomy in a patient who has had 7 episodes in the past year, 5 episodes per year in the past 2 years or 3 episodes per year in the past 3 years, and all infections should be culture confirmed group A strep. Decisions regarding surgery should always be discussed with families on a case-by-case basis.

Last on our list of common infectious causes of sore throat is infectious mononucleosis. Infectious mononucleosis has an insidious onset. A child will present with fever, a mild to

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April 16, 2016

moderate sore throat, and fatigue. On exam, the child may have erythematous tonsils with exudate, palatal petechiae, symmetrical lymphadenopathy, and splenomegaly. A child with a presentation of infectious mononucleosis may require a throat swab depending on the clinical suspicion of strep pharyngitis. Other investigations for infectious mononucleosis include a CBC, a monospot test or heterophile antibody test, and in certain settings EBV serology for viral capsid antigen, or VCA, and EBV nuclear antigen, or EBNA. Treatment of infectious mononucleosis is supportive. Ensure the child is well hydrated and well rested. Acetaminophen or ibuprofen can be given for symptomatic relief. Administration of antibiotics to patients with mono often results in a rash that is maculopapular in nature. Children should be counseled to avoid contact sports for the duration of illness due to the risk of splenic trauma.

Next, we will review the investigations and treatment for the emergent causes of sore throat. The most important and life-threatening is epiglottitis. Epiglottitis has a rapid onset and progression. The child will present with severe sore throat, stridor, coarse voice, dysphagia, and fever. Epiglottitis is a medical emergency. A secure airway must be established emergently in consultation with anesthesia or ENT specialist. On exam, the child may appear toxic, be tachycardic, tachypneic and have low oxygen saturation. On exam, they may have increased work of breathing, cervical lymphadenopathy, drooling, and neck stiffness. Be sure to not cause additional distress to the child during physical exam.

In a child with suspected epiglottitis, perform a CBC and blood culture. **Lateral neck soft-tissue x-ray, or bedside ultrasound are methods of visualizing the epiglottitis. Ensure you do not perform any maneuvers supine as this puts the airway at risk.** Patients with epiglottitis should be admitted to an intensive care setting for continuous monitoring. Empiric antibiotic therapy, such as Ceftriaxone, should be given to cover group A streptococcus, Staph aureus and respiratory anaerobes. Once the child is afebrile and has clinically improved, therapy can be stepped down to oral antibiotics to complete a 14-day course. Analgesics can also be given for symptomatic management of pain and fever, and IV fluids for adequate hydration.

Another common emergent cause of sore throat is retropharyngeal abscess. Children with retropharyngeal abscesses may present similarly to epiglottitis with rapid onset of severe sore throat, stridor, coarse voice, dysphagia and fever, but they may also have a vague and nonspecific presentation. On exam, there may be a palpable fluctuate mass in the pharyngeal wall. The examiner must be careful to avoid distressing the child and avoid rupturing the abscess. Children may also have neck stiffness. In a child with a suspected pharyngeal abscess, lab tests are often nonspecific, with elevated inflammatory markers and often negative blood cultures. An inspiratory lateral neck x-ray in full extension can be used to visualize the abscess in the prevertebral soft tissue. Treatment for pharyngeal abscesses includes empiric IV antibiotics, such as Cloxacillin, Ceftriaxone and Metronidazole, to cover gram-negative, gram-positive and anaerobic organisms, and ENT consultation. Around 25% of cases can be managed medically but many abscesses will require incision and drainage under controlled conditions; if performed this can be sent for culture and therapy narrowed appropriately.

Case

Let's return to the case. After careful consideration of Hailey's history and physical exam, you tell your preceptor that the following signs and symptoms Hailey presents with are in line with streptococcal pharyngitis. She has no previous history of cough or congestion prior to sore throat, there was an acute onset of moderately painful sore throat, she is febrile, and on exam she has swollen, erythematous tonsils with exudate and painful cervical lymphadenopathy. Your preceptor agrees with you and a throat swab is performed. Your preceptor sends Hailey and her

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father home with a prescription for 10 days of amoxicillin and advises them to wait for a call regarding the throat culture before filling the prescription. Two days later, you review Hailey's results and finds that her throat swab was positive for group A streptococcus. Your preceptor calls Hailey's parents and tells them to fill the prescription for amoxicillin and to ensure that Hailey completes the 10 day course.

Conclusion

This brings us to the end of the podcast. Let's finish with some take-home points from this podcast include:

- 1) There is a wide differential for sore throat. Although viral upper respiratory tract infection is the most common cause, keep your differential broad to ensure you do not miss an emergent or life threatening cause.
- 2) When examining a child who is in respiratory distress, do not put the child in further distress as it can cause airway obstruction. If you are concerned, always ensure there are means to secure an airway if it becomes obstructed. Remember, ABCs.
- 3) Over-the-counter cough and cold medications should not be used as they may cause more harm than benefits.
- 4) The main indication for a throat swab is high clinical suspicion for Group A strep; key clues on history include absence of cough, abrupt onset fever, tonsillar exudates with swelling and age 3-14 years. Treatment is only indicated for streptococcal pharyngitis with culture confirmation.
- 5) Antibiotics for streptococcal pharyngitis are primarily to prevent rheumatic fever. A child may still develop post-streptococcal glomerulonephritis after completing a course of antibiotics.

Thanks for listening!

STREP PHARYNGITIS RISK ASSESSMENT TOOL (not included in actual podcast)

CENTOR SCORE FOR STREP PHARYNGITIS

	Score
Age Range	
3-14 years	+1
15-44 years	0
> 45 years	-1
Exudate or swelling on tonsils	+1
Tender/swollen anterior cervical lymph nodes	+1
Fever (>38C)	+1
Cough	
Absent	+1
Present	0

Scoring:

Score	Risk of Strep Pharyngitis	Management
< 0	1 – 2.5%	No further testing or antibiotics indicated
1	5 – 10%	Optional: no further testing or antibiotics indicated OR throat swab and culture
2	11 – 17%	Throat swab and culture
3	28 – 35%	Throat swab and culture
≥ 4	51 – 53%	Consider empiric treatment with antibiotics

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April 16, 2016

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