



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Mary T. Bassett, M.D., M.P.H.
Commissioner

2016 ALERT # 13

Invasive *Streptococcus pyogenes* in children

Please Share this Alert with All Emergency Medicine, Pediatric, Family Medicine, Infectious Disease, and Internal Medicine Staff in Your Facility

- The Health Department has detected an increase in invasive *Streptococcus pyogenes* (Group A Streptococcal disease/GAS) infections in children, especially in the Bronx.
- Some patients have presented with atypical symptoms and were diagnosed with sinusitis, pneumonia, and abscesses.
- Consider prompt empiric antibiotic treatment while awaiting the results of cultures in children with a prolonged febrile illness or abnormal vital signs out of proportion to clinical illness.

May 20, 2016

Dear Providers,

The Health Department is alerting providers to an increase in invasive *Streptococcus pyogenes* (GAS) infections in children. Among children less than 18 years old, there were 18 reported GAS cases in March and April 2016 compared with 12 during the same period in 2015. Most patients (44%) were Bronx residents, and the median age was 6.5 years. Below are clinical summaries of five recent cases in children that illustrate the unusual presentations and diagnostic challenges of invasive GAS. Four patients had positive blood cultures, and one had a positive culture only obtained during surgery. All isolates were susceptible to penicillin, and all patients recovered and have been discharged home.

Case 1 (mid-March)

Seven-year-old child presented to the emergency department (ED) with one day of fever (105.2°F) and right arm, right-sided neck, and abdominal pain. The child also complained of cough and congestion for two days. The temperature in the ED was 102.9 °F, and heart rate was 159 bpm. The patient vomited three times while in the ED. Exam revealed mental confusion and a distended and tender abdomen. An abdominal ultrasound detected pericholecystic fluid, and subsequent CT scan identified this as diffuse fluid around the liver suggestive of vasculitis. There was no evidence of appendicitis. A rapid strep test of the pharynx was positive. Neck pain persisted despite appropriate antibiotic treatment, and Doppler ultrasound and CT revealed a superficial venous thrombosis. Intravenous antibiotics were continued for 14 days.

Case 2 (mid-March)

Twelve-year-old child presented to the ED with a severe headache and right eye pain with photophobia for one day. The child's right eyelid was swollen and tender to palpation. The child had a history of asthma. Temperature in the ED was 103.1°F, and the heart rate was 120 bpm. A CT scan revealed right orbital cellulitis, a subperiosteal abscess, and extensive disease of the maxillary, frontal, and ethmoid

sinuses. Blood cultures were negative, but multiple intraoperative orbital and maxillary cultures grew GAS. The patient was treated with 10 days of intravenous antibiotics.

Case 3 (mid-April)

Ten-year-old child presented with a history of intermittent fever, including a maximum of 105.7 °F, for three weeks. The child was evaluated on three prior occasions; evaluation included a chest radiograph, which was unremarkable, and resulted in a final diagnosis of viral illness of unknown etiology. One week before admission, the child developed cough and coryza. Past medical history was significant for three previous episodes of Streptococcal pharyngitis (was positive on this visit as well). On the day of admission, the child complained of frontal headache, focal frontal bone tenderness, and left eye pain. Upon admission to the hospital, the patient had a temperature of 98.6 °F with a heart rate of 92 bpm. A white blood cell count was 20.9 K/ μ L, and radiographic studies revealed sinusitis and an epidural abscess. The patient underwent surgical procedures to drain the frontal, maxillary, and ethmoid sinuses. Multiple intraoperative cultures were positive for GAS.

Case 4 (mid-April)

Five-year-old child was evaluated for two days of pain, swelling, and redness of the right neck and thorax accompanied by fever to 102 °F. No sore throat was reported. The patient had a history of asthma. The pulse in the ED ranged from 124 to 137 bpm with an initial white blood cell count of 6.7 K/ μ L which declined to a low of 4.0 K/ μ L. The platelet count at the time of admission was 76 K/ μ L and declined to a low of 31 K/ μ L. The patient also became anemic with hemoglobin of 6.3 g/dL. Blood culture grew GAS, and the patient was evaluated for septic arthritis of the right hip and ankle as well as for septic pulmonary emboli. The diagnoses at discharge were toxic shock syndrome and right chest wall myositis.

Case 5 (early-May)

Seven-year old child presented with a 10 day history of cough and fever to 103 °F. The patient also reported vomiting brownish fluid and diarrhea. The heart rate was 142 bpm. On examination, the tonsils were inflamed and enlarged, an erythematous rash was noted along the left side of the neck, and a finger was erythematous and swollen. Rales were noted in the right upper lung field and the chest radiograph revealed right upper lobe consolidation. The white blood cell count was 39,000 K/ μ L. The child was diagnosed with GAS necrotizing pneumonia, pleural effusion, and cellulitis of the finger.

Overview

There is no evidence to suggest these patients are epidemiologically linked. Nevertheless, we are alerting providers because of several uncommon features. First, infections occurred in an age group that generally has the lowest rate of GAS (1.1 per 100,000 in children 5 to 17 years-old is) (1). Second, GAS often follows viral infections that suppress the immune system, but none of the patients reported here had preceding varicella or had tested positive for influenza. Two children reported here did have a history of asthma, one of whom was known to be on maintenance inhaled corticosteroids. Third, patients presented with atypical symptoms and were diagnosed with sinusitis, pneumonia, and abscesses.

Although GAS typically occurs during the cold weather months of December through March, we advise providers to maintain a heightened index of suspicion for GAS in febrile children who present with the following: a prolonged illness, tachycardia out of proportion to fever or dehydration, and respiratory or

central nervous system symptoms without an obvious etiology. Providers should also consider empiric antibiotic treatment while awaiting the results of cultures.

To report a suspected cluster or confirmed GAS case with unusual features, please call 866-NYC-DOH1 (1-866-692-3641). DOHMH greatly appreciates your assistance and vigilance.

Sincerely,

Don Weiss, MD, MPH

Bureau of Communicable Disease

Ellen Lee, MD

Bureau of Communicable Disease

1. Centers for Disease Control and Prevention. 2014. Active Bacterial Core Surveillance Report, Emerging Infections Program Network, Group A *Streptococcus*, provisional report—2014. Available via the internet: <http://www.cdc.gov/abcs/reports-findings/survreports/gas14.pdf>