

Gonorrhea-positive sinus cultures in a 15-year-old with allergic fungal sinusitis

Kimberly Donner, MPAS, PA-C; Yann-Fuu Kou, MD; Anna Tomkies, MD; Dinesh Rakheja, MD; Ron B. Mitchell, MD; Gopi Shah, MD, MPH

ABSTRACT

This article describes a patient with gonorrhea in sinus cultures and allergic fungal sinusitis. A multidisciplinary team was assembled to deliver the results to the minor patient and her family and provide support and resources for long-term care.

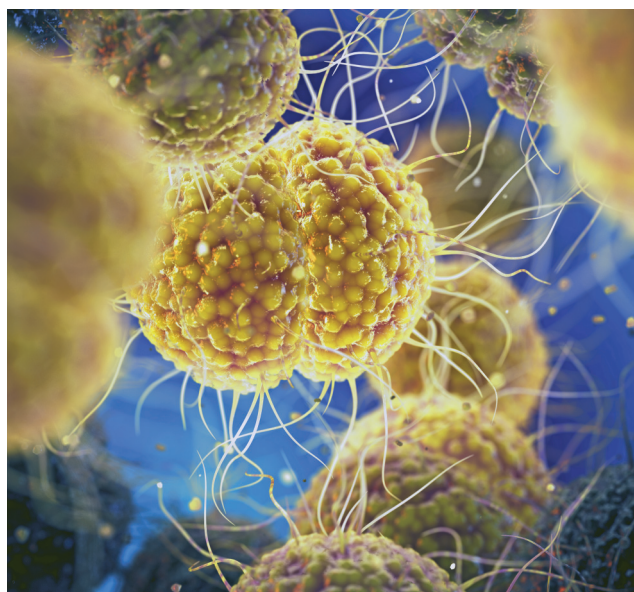
Keywords: allergic fungal sinusitis, pediatric, nasal, gonorrhea, rhinosinusitis, polyps

CASE

A 15-year-old girl with a history of allergic rhinitis presented to the pediatric otolaryngology clinic complaining of a nasal obstruction. This was her first visit to a sinus specialist.

History Two years ago, her primary care physician had diagnosed the patient with nasal polyps and allergic rhinitis; she was treated with corticosteroids without definitive improvement. At this visit, she reported symptoms of persistent difficulty breathing through the nose, snoring, and chronic congestion for 2 years, not improved with intermittent use of nasal corticosteroids and oral antihistamines. She denied changes in smell or taste. She reported an allergy to cephalosporin, which caused severe mouth ulcerations a few years ago.

Physical examination A focused physical examination revealed a healthy-appearing 15-year-old female who was alert and socially appropriate. She had normal symmetric facies, with no sinus tenderness on palpation. The nasal examination showed a midline septum with diffusely boggy mucosa, thin clear drainage, and bilateral nasal vaults obstructed with polypoid tissue, which was visible with



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anterior rhinoscopy. The remainder of the head and neck examination were without abnormality.

Diagnostic testing and management A flexible nasal scope was used to look closer at the nasal tissue, but was difficult to visualize the posterior nose due to bilateral obstruction from the polyp tissue. A noncontrast CT scan showed pansinusitis and hyperdense inspissated secretions (**Figure 1**). She was scheduled for bilateral functional endoscopic sinus surgery (FESS). A week after the surgery, surgical pathology confirmed the diagnosis of allergic fungal sinusitis (AFS), a localized allergic reaction to noninvasive fungal growth that leads to chronic sinusitis

Kimberly Donner practices pediatric otolaryngology at Children's Medical Center in Dallas, Tex. **Yann-Fuu Kou** is a pediatric otolaryngology fellow at Cincinnati (Ohio) Children's Hospital and a previous resident in the Department of Otolaryngology, Head and Neck Surgery at the University of Texas Southwestern Medical Center in Dallas. **Anna Tomkies** is a resident in the Department of Otolaryngology, Head and Neck Surgery at the University of Texas Southwestern Medical Center. **Dinesh Rakheja** is a professor of pathology at University of Texas Southwestern Medical Center in Dallas. **Ron B. Mitchell** is a professor and vice chairman of the

Department of Otolaryngology, Head and Neck Surgery at the University of Texas Southwestern Medical Center and chief of pediatric otolaryngology at Children's Medical Center. **Gopi Shah** is an assistant professor in the Department of Otolaryngology, Head and Neck Surgery at the University of Texas Southwestern Medical Center. The authors have disclosed no potential conflicts of interest, financial or otherwise.

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Key points

- AFS often requires surgical and medical interventions.
- The rare diagnosis of an STI in an adolescent's sinuses requires intentional planning for discussion and coordination for treatment.
- Involving all the appropriate parties and navigating parental involvement can be challenging with adolescents when STIs are involved.

with nasal polyps.¹ Microbiology cultures grew *Bipolaris*, a common fungal element, as well as *Neisseria gonorrhoeae* from the right maxillary meatus. At a postoperative visit, a detailed social history, including sexual history, was obtained. The patient had been involved with two consensual, nonstatutory separate partners in the previous few months. She admitted to unprotected sexual interactions but would not comment on oral sex, in particular. These interactions were without condoms or contraception.

REACH (Referral and Evaluation of at Risk Children) was consulted because of the patient's age, concerns for her safety, and questions surrounding legality in sharing this information about sexually transmitted infections (STIs) with the parents. A social worker from REACH was present during the follow-up visit in the otolaryngology clinic. The father was asked to step out of the room when clinicians discussed the results with the patient. After receiving the news about her sinus cultures showing *N. gonorrhoeae*, the patient consented to her father returning to the room to be informed. The patient was then evaluated in the REACH clinic by the psychologist about her high-risk sexual behavior. A child life specialist also was present to support the patient and to help prepare her for the required pelvic examination in the REACH clinic. Although the patient was without vaginal complaints, the pelvic examination is part of the routine workup per the REACH clinic protocol.

The family was given resources and materials about STIs and safer sex practices. The social worker also discussed coping mechanisms and support systems with the patient by identifying things the patient enjoyed, such as listening to music, and potential friends and family members she could depend on to help cope with this news.

The patient was sent for a comprehensive STI evaluation including urine nucleic acid amplification testing (NAAT) for chlamydia and gonorrhea, trichomonas, syphilis, HIV, hepatitis B, hepatitis C, and a pregnancy test. All tests were negative. The patient was treated with doxycycline and azithromycin given her cephalosporin allergy. Her symptoms of nasal obstruction improved postoperatively, without known return of gonorrheal infection.

The patient has followed up in the ENT clinic every 3 to 6 months, which is routine for patients with AFS. Often, nasal endoscopy is performed to monitor for disease or polyp recurrence. At these visits, no signs of chronic inflammation were noted. She continues to be compliant with 0.9% sodium chloride solution rinses and allergy immunotherapy shots, without recurrence of AFS or other bacterial sinusitis.

DISCUSSION

AFS is considered an immunologic response to a fungal antigen with pathogens including *Aspergillus*, *Bipolaris*, *Curvularia*, *Exserohilum*, *Alternaria*, *Drechslera*, *Helminthosporium*, and *Fusarium*.¹ Bacterial isolates in chronic sinusitis often include coagulase-negative staphylococci, *Streptococcus pneumoniae*, *Enterobacteriaceae*, *Staphylococcus aureus*, and *Pseudomonas aeruginosa*.² We present the first reported case of coinfection of *Bipolaris* and *N. gonorrhoeae* in the sinuses in a patient with AFS.

AFS, a type of eosinophilic chronic rhinosinusitis, is caused by a type I hypersensitivity reaction and can present with nasal polyposis, eosinophilic mucus, and fungal elements on culture of surgically removed tissue.³ The mean age at diagnosis is 21.9 years.³ Patients often report

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a combination of nasal obstruction, nasal discharge, headaches, or loss of smell or taste.³ Management is extensive and involves medical and surgical interventions such as systemic corticosteroids followed by bilateral functional endoscopic sinus surgery.³ Long-term medical therapy with topical corticosteroids and 0.9% sodium chloride solution irrigation combined with multiple follow-up endoscopic evaluations is vital in postoperative AFS treatment.³ Little evidence supports the use of topical or oral antifungals.⁴

Gonorrhea is the second most common sexually transmitted infection in the United States.⁵ Most infections with gonorrhea are urogenital, resulting in cervicitis, urethritis, proctitis, or pelvic inflammatory disease.⁵ However, other sites including the pharynx, eyes, rectum, or joints can be involved.⁶ Pharyngeal infection in patients can be either asymptomatic or present with sore throat, fever, and tender cervical adenopathy.⁶ A recent study noted that a significant amount of patients can have isolated pharyngeal gonorrhea without detected urogenital coinfection, highlighting the potential need to



FIGURE 1. Coronal noncontrast CT scan showing bilateral sinus opacification and inspissated secretions consistent with AFS

conduct pharyngeal STI screening regardless of symptoms.⁷ The unique localization of *N. gonorrhoeae* in the sinuses can be explained by the spread of infection from the pharynx to the nasal cavity and sinuses. The recommended treatment of gonorrheal infections in the pharynx includes dual therapy with a single IM dose of ceftriaxone plus azithromycin 1 g orally in a single dose.⁸ Dual therapy is routine to reduce the emergence of antibiotic resistance.⁸ In patients with cephalosporin or IgE-mediated penicillin allergy, limited evidence exists on alternative treatment regimens for gonorrhea. However, the CDC offers potential therapeutic options, including single-dose gemifloxacin 320 mg plus oral azithromycin 2 g or single-dose gentamicin 240 mg plus oral azithromycin 2 g.⁸ The CDC also recommends including infectious disease specialists in these decisions. In this case, we consulted an infectious disease physician, who recommended a combination of doxycycline and azithromycin in light of the patient's cephalosporin allergy.

Several models have been developed with suggested approaches for delivering unwanted or unexpected news. Most models recommend delivering the news in person, sharing the information clearly, and assuring the message was understood.⁹ The ABCDE model outlines advance preparation, building a relationship, communicating clearly, dealing with the family reactions, and validating emotions.¹⁰ Another model, SPIKES, focuses on gathering information from the patient, transmitting the medical information, providing support to the patient, and eliciting the patient's collaboration in developing a strategy or treatment plan.¹¹ The Fine protocol include phases

such as preparation, information acquisition, information sharing, information reception, and response.¹² All of the models are similar in emphasizing open communication and validation of the patient's emotions and clinical needs.

In our case, a multidisciplinary team that included the otolaryngologist, a social worker, and a child life specialist was helpful in delivering the news. By discussing the results with the patient first, she was included in the decision to inform her family. The patient and the family were receptive to the medical team's approach, which allowed for clear and effective management of the difficult situation.

CONCLUSION

We present a case of *N. gonorrhoeae* cultured from the sinuses of an adolescent with AFS. A multidisciplinary team collaborated to improve delivery of the diagnosis and treatment plan. This approach helped to maintain the patient-otolaryngologist relationship and the patient's desire and commitment to long-term follow-up of AFS. **JAAPA**

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