

Neisseria cinerea bacteremia secondary to a retropharyngeal abscess



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INTRODUCTION

Neisseria cinerea is a commensal bacteria of the human oropharynx that is rarely associated with serious infections. Case reports involving invasive *N. cinerea* infections are uncommon, as are retropharyngeal abscesses in adults. (1,3) Based on a review of the literature, *Neisseria cinerea* bacteremia secondary to a retropharyngeal abscess has not been described. We present a unique case of an elderly female without clear predisposing factors for a retropharyngeal abscess, who presented with atypical symptoms, and was found to have an *N. cinerea* bacteremia.

BACKGROUND

Neisseria cinerea is a gram-negative, oxidase-positive, and catalase-positive diplococci (figure 1). It is a commensal bacteria of the human oropharynx, with low pathogenic potential, and very few reported cases of bacteremia. Only a handful of case reports involving invasive *N. cinerea* infection are documented, and the affected patients had underlying comorbidities:

- 1 case of posttraumatic meningitis with subsequent bacteremia
- Bacteremia in one post-splenectomy patient
- Bacteremia in one patient with AIDS
- 1 case of endocarditis in an intravenous drug user
- 2 patients with continuous ambulatory peritoneal dialysis (CAPD)-associated peritonitis
- 2 cases of pulmonary infections in immunosuppressed patients
- 1 case of proctitis in a child
- Several cases of purulent conjunctivitis in neonates. (2,4,5,7)

Retropharyngeal abscesses themselves are rare in adults, and are usually attributable to local trauma, such as fishbone ingestion or instrumentation. (1,3) The classic presentation of a retropharyngeal abscess involves sore throat, fever, dysphagia, odynophagia and trismus. To our knowledge, there are no case reports describing *Neisseria cinerea* bacteremia secondary to a retropharyngeal abscess.

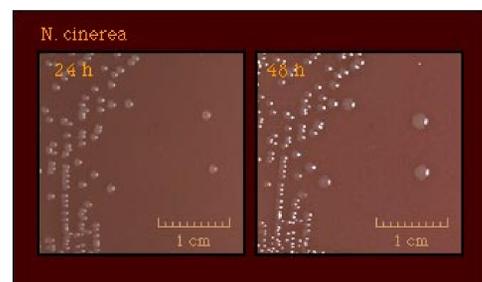


Figure 1: Culture of *Neisseria cinerea* on chocolate agar at 24 and 48 hours

CASE PRESENTATION

History of Present Illness: The patient is a 91 year old female who presented to the Emergency Department with abdominal pain and mild confusion. She noted fever, rigors and nausea the night prior to presentation, which resolved spontaneously

Past Medical History: Hypertension, hypothyroidism, hypercholesterolemia

Past Surgical History: None

Social History:

- Lives with her daughter
- Retired OR nurse
- No pets at home
- No travel or known sick contacts
- No alcohol, tobacco or drug use

Physical examination:

- **Vital signs:** Temperature 38.7C which increased to 39.5C; BP 83/43; O2 95% on room air
- **General:** Well nourished female in no acute distress; alert and oriented though noted to have mild confusion
- **HEENT:** No cervical lymphadenopathy, odynophagia, trismus, tonsillar enlargement, exudate, dysphonia, or stridor
- **Cardiac:** Regular rate and rhythm, no murmurs, rubs, or gallops
- **Respiratory:** Normal respiratory effort, clear to auscultation, no wheezing
- **GI:** Mild diffuse tenderness to palpation, without rebound or guarding
- **MSK:** Neck with full active range of motion; no pain on movement
- **Neurologic:** No focal abnormalities

Hospital Course:

Emergency Department: The patient received fluid resuscitation and was placed on norepinephrine. Blood cultures were obtained prior to antibiotic administration, and she was then started on piperacillin-tazobactam and azithromycin. Laboratory examinations were notable for WBC 3.5; LDH 257; lactate 3.2; procalcitonin 31.20.

CT scan of abdomen and pelvis with contrast was notable for a small bilateral opacification at the lung bases, left more prominent than right

Hospital day 2: Norepinephrine was discontinued, lactate normalized, and procalcitonin decreased to 27.97. Her abdominal pain resolved. Blood cultures were positive for *Neisseria cinerea*. She began to complain of new onset headache and neck pain, without meningeal signs.

Hospital day 3: Repeat blood cultures were negative. Her head and neck pain was still present, but did improve overnight.

Hospital day 4: MRI of the neck was pursued secondary to her persistent neck pain. This was notable for a retropharyngeal abscess with extension from C2 – T4 (figures 2 & 3). She was evaluated by ENT, and conservative treatment was recommended.

Hospital day 5: The patient clinically improved and piperacillin-tazobactam was discontinued.

Hospital day 6: She was discharged on IV ceftriaxone 2g daily and oral metronidazole 500mg three times daily with planned follow up with the Infectious Diseases Clinic for serial imaging to evaluate resolution of the retropharyngeal abscess.

IMAGING

MRI Cervical Spine

IMPRESSION: “These imaging findings are highly concerning for retropharyngeal abscess, with involvement of the “danger space.”
-An urgent ENT consultation is recommended.
-No findings of discitis or epidural abscess can be seen at this time.
-Multiple levels of prominent degenerative change are also seen.”

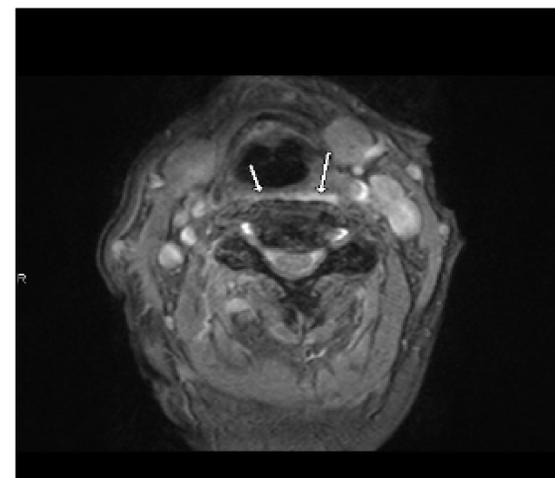


Figure 2: Axial view of retropharyngeal abscess with surrounding soft tissue edema



Figure 3: Sagittal view of retropharyngeal abscess, spanning from C2-T4 with maximum AP thickness of 7mm.

DISCUSSION

To our knowledge, there are limited reports of extensive infections secondary to *Neisseria cinerea*, and only a handful of *Neisseria cinerea* bacteremia cases have been reported.

Retropharyngeal abscesses are uncommon in adults, and are typically secondary to local trauma (fish bone ingestion, instrumentation), or dental infection. Of one study conducted in Germany to evaluate the prevalence of deep neck infections in adults, only 21.6% were older than 65 years of age (average age 73). (6) Among these, 45% had an underlying comorbidity, the most common being diabetes. In the elderly age group, the most common presenting symptoms were sore throat, odynophagia, and neck pain. (6) While our patient did develop neck pain in the hospital, this was not present on admission, and resolved with muscle relaxants, indicating a musculoskeletal origin. She also lacked the typical physical exam findings of swelling of the oropharynx, or bulging of the posterior pharyngeal wall.

In the same study, the most common source of infection was odontogenic, followed by tonsillar and salivary gland. (6) Our patient did not have any clear source of dental or tonsillar infection. Deep neck space infections are typically polymicrobial, with the most common isolates being viridians streptococci and the typical anaerobes present in dental infections. In otogenic infections, *Staphylococcus* and *Pseudomonas* must also be considered, while *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* are present in sinogenic infections. (1) Given the typically commensal relationship of *N. cinerea* with the native oral flora, it is not often an isolate in infections, as was seen in this case.

The etiology of this patient’s bacteremia is most likely related to the retropharyngeal abscess, as no other clear source of infection was identified. The question arose of whether our patient experienced a transient bacteremia associated with the abscess versus a low inoculum infection, given that her blood cultures cleared so quickly. Piperacillin-tazobactam was continued during her hospitalization to cover both the *Neisseria cinerea*, as well as a likely polymicrobial retropharyngeal abscess.

In summary, this is the case of a 91 year old female without significant medical history who presented with *Neisseria cinerea* bacteremia secondary to an atypical presentation of a retropharyngeal abscess. As outlined above, there are only few known cases of invasive *Neisseria cinerea* infection, and no known cases to our knowledge of *Neisseria cinerea* bacteremia secondary to a retropharyngeal abscess.

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