CLINICAL VIGNETTE

Retropharyngeal Infection

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A 74-year-old woman with a past medical history of lung cancer, in remission, COPD, obesity and hypothyroidism presented to clinic complaining of three days of sore throat and neck pain. The neck pain was sharp, severe, located on the right side without radiation and worsened by turning to the contralateral side and associated with subjective swelling. A sore throat developed the day prior but she denied any fever, chills, rhinorrhea, nasal congestion, cough or malaise. She had no night sweats, weight loss, dysphagia, globus sensation, choking episodes or regurgitation. Examination was significant for general ill appearance, moderately reduced range of neck rotation, tenderness of the right para-cervical and sternocleidomastoid muscles and trismus. She was sent immediately to the Emergency Department.

In the ED the patient underwent urgent contrast CT of the Soft Tissue Neck which revealed "an approximately 1 cm region of relative low-attenuation anterolateral to the base of the dens in the retropharyngeal space with retropharyngeal edema seen extending from the superior C3 to the inferior C5 level extending to both sides of midline".

Infectious disease and Otolaryngology were both consulted; surgery for drainage was deferred, as there was no fluid collection noted on imaging. Given no other symptoms of an upper respiratory infection the likely cause was thought to be odontogenic. Intravenous ampicillin-sulbactam 3g every six hours was given along with fluids and frequent monitoring. The patient was discharged after three days on oral amoxicilin-clavulanate. She followed up in clinic seven days later with near complete resolution of her symptoms. She finished a two-week course of antibiotic with complete resolution and no recurrence.

Discussion

Deep space neck infections have become far rarer in the antibiotic era. However, a high clinical suspicion remains imperative given the rapidity of onset and potential for life threatening complications and extension to more vulnerable areas such as the cerebrospinal column.

Our patient had involvement of the retropharyngeal space, which is bound by the constrictor muscles of the neck and the deep cervical fascia. It communicates with the parapharyngeal space laterally where the carotid sheath resides. This area is in close proximity to the so called "danger space" just posteriorly.[1] The danger space extends from base of the skull to the level of the diaphragm, making it a potential route of dissemination from the neck to the chest. Acute necrotizing mediastinitis is the most dangerous complication from an infection in this area. This is rare in the current antibiotic age and is now most commonly caused by esophageal penetration rather than extension of infection.[2]

Symptoms arising from infections in this space are generally related to the underlying cause of the infection. This space is particularly vulnerable to bacterial seeding from direct penetrating trauma as from a chicken bone or other sharp food. Obstructive symptoms - sore throat, difficulty swallowing, even pooling of secretions – can be present. Dental abscess or pain can also localize the infection. Posterior pharyngeal edema, erythema and discharge may be hard to appreciate due to trismus limiting the evaluation. Infections spreading from the nasal cavity or middle ear spaces will also have corresponding pain, discharge and erythema.

Given the proximity to the oral cavity, sinus and middle ear spaces, most infections are caused by bacteria common to this area. Viridans streptococci as well as common oral anaerobic species such as Peptostreptococcus, Fusobacterium nucleatum and Actinomyces species, are the most common organisms recovered.[3]

Computed tomography is the most effective imaging modality due its ability to localize the process and define its extent. These images are also useful in evaluating and planning surgical intervention for drainage or aspiration. MRI is effective but not necessary and can delay diagnosis due to complicating patient factors such as claustrophobia and implants. X-ray is of limited usefulness. While it can detect air fluid levels and foreign bodies as well as mass effects from edema or abscess it should not delay more advanced imaging if a deep neck space infections is suspected.[4]

The CT of the current patient demonstrated only cellulitis and thus drainage was not indicated. If a concurrent abscess had been identified, drainage would be delayed until the cellulitis phase had ended to prevent further dissemination of infection. Once acute cellulitis had been treated or resolved, a loculated abscess should be drained either by open approach or ultrasound guided aspiration, which is safe and effective in absence of a compromised airway.[5]

This patient requested corticosteroids due to pain and trouble swallowing but they were initially withheld. While steroids are commonly used for upper airway swelling, the evidence for use in deep neck space infections is mixed and limited. The specialists in this case were concerned about worsening infection and metabolic side effects given the patients past history of lung cancer, COPD and obesity. After 48 hours of IV antibiotics oral steroids were given for symptomatic relief.

As discussed above antimicrobial treatment should be based upon the likely source of infection. Given an oral or odontogenic source ampicillin-sulbactam (3g IV q6 hours), or penicillin G (2-4 MU IV q4-6 hours) plus metronidazole (500mg q6-8 hours) or clindamycin (600mg IV q6-8 hours) are the preferred regiments.

For infections originating in the otic or sinus areas the regimen should consist of ampicillin-sulbactam as above, or ceftriaxone (1G IV q24 hours) plus metronidazole (500mg IV q6-8 horus) or doxycycline (200mg IV daily or 100mg IV BID).

Immunocompromised patients should receive cefepime (2 g IV every 12 hours) plus metronidazole (500 mg IV every six to eight hours) or imipenem (500 mg IV every six hours) or meropenum (1g IV every eight hours) or piperacillin-tazobactam (4.5g every six hours). Finally, patients with risk factors for MRSA (ie. IV drug use, comorbid conditions, high local rate of MRSA) should receive either vancomycin (15-20mg/kg IV q12 hours) or linezolid 600mg PO or IV q12 hours) as well.

Antibiotics are continued until localized tenderness, fever and leukocytosis have resolved, which typically takes two to three weeks. This patient was symptom free after 1 week but continued antibiotics for one additional week to ensure eradication.

As seen in this patient, high suspicion, early detection and prompt treatment are key to treating a deep neck space infection and preventing serious complications.

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