Recurrent Deep Neck Space Infections

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Introduction

The incidence of deep neck space infections has been significantly reduced by modern antibiotic therapy. These infections are relatively rare and yet, life threatening complications merit special consideration by head and neck surgeons. We report one case of recurrent deep neck space infection successfully treated by antibiotics and drainage.

Case Report

A 17 year old worker presented with a history of progressive dysphagia both for solids and liquids, difficulty in fully opening the mouth, neck stiffness and low grade fever of four days duration without any dyspnoea or dysphonia. He was a vegetarian and gave no history of throat trauma. He had an abscess in the left submandibular region two years ago and a right sided quinsy one year ago for which he was treated with antibiotics and incision and drainage. On examination, he was dehydrated, febrile but not toxic, had restricted movements of the neck and grade one trismus. Oral and dental hygiene was satisfactory. There was a tense but fluctuant bulge in the posterior pharyngeal wall on the right side extending upto the level of the lower pole of the tonsil. The tonsils were normal in size and position,

there being no signs of any acute inflammation. No spinal tenderness, neck swelling or lymphadenopathy were detected. Indirect laryngoscopy revealed pooling of saliva and mild oedema of the supraglottic larynx without any airway compromise. A clinical diagnosis of acute retropharyngeal abscess with possible extension to parapharyngeal space was made. Urgent X-ray of soft tissues of the neck showed loss of cervical lordosis and gross widening of prevertebral soft tissues (Fig 1).

Investigations revealed Hb-11.6 gm% with mild leucocytosis. Blood urea was raised marginally possibly due to dehydration which later became normal. X-ray chest and cervical spine, other biochemical parameters, blood culture and ultrasonography of abdomen were normal. He tested negative for HIV. CT scans showed a well defined retropharyngeal abscess with ring enhancement on right side extending from the skull base to the level of the fourth cervical vertebrae (Fig 2). There was associated cellulitis of the parapharyngeal space. Initial antibiotic therapy consisted of intravenous cefotaxime, gentamycin - later discontinued due to raised blood urea, and metronidazole. After 24 hours of antibiotic therapy and rehydration the abscess was drained perorally under general anaesthesia administered by an experienced anaesthesiologist. Using tonsillectomy

Fig. 1 : Lateral radiograph of neck showing increased prevertebral soft tissue shadow

Fig. 2 : CT scan showing right sided retropharyngeal abscess with cellulitis of parapharyngeal space

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instruments a vertical right-sided paramedian incision 5-6 cms long was given and the abscess opened from skull base to the level of the hypopharynx by finger dissection. About 40 ml of pus was drained. The wound was left open and Ryles tube feeding given for 72 hours. Pus culture revealed growth of *Staphylococcus aureus* sensitive to ampicillin, gentamycin, chloramphenicol and ciprofloxacin. He was continued on IV ampicillin, ciprofloxacin and metronidazole for 10 days and thereafter orally for another 10 days. He became afebrile after 96 hours. Oral incision fully healed in seven days and he was taking normal diet. He was discharged after two weeks. Tonsillectomy was done six weeks later. Patient is on regular follow up and after six months he is asymptomatic.

Discussion

The deep neck spaces are actually potential spaces between fascial planes that surround and invest the structures of the neck. The path of spread by neck infections is along and directed by these spaces. These connective tissue spaces can frequently confine and limit the spread of suppurative processes, but they are imperfect barriers. Communication can occur between the spaces as well as outside the confines of the neck, leading to life threatening complications.

Infections of the deep neck spaces present a challenging problem due to the complex anatomy, deep location, proximity to great vessels and nerves and communication with each other. Today, tonsillitis remains the most common source of infection in children followed by odontogenic causes. Ungkonont [1] reviewed 117 cases of deep neck abscesses in children and found the following distribution-peritonsillar infections (49%), retropharyngeal infections (22%), submandibular infections (14%), buccal infections (11%), parapharyngeal infections (2%), canine space infections (2%). Virolainen [2] reviewed 65 cases in adults and the origin was odontogenic in 19, tonsillar in 14, trauma in 7, salivary glands in 5, branchiogenic cysts in 5, other known causes in 3, and unknown in 12 cases. The abscesses of dental origin were most commonly located in the submandibular space (11/19). The remaining were mostly in the parapharyngeal space (25/46). 20-50% of cases may have no identifiable cause. Acute retropharyngeal abscess is uncommon above 4 years of age and extremely rare in adults excluding those following trauma. Microbiology usually reveals mixed aerobic and anaerobic organisms. More than half the cases of deep neck space infections have growth of more than one organism. The most common organisms are *Streptococcus*, *Staphylococcus*, *Bacteroides*, *Micrococcus* and *Neisseria* [3]. Gram negative organisms are found in fewer cases. The empirical use of a penicillinase resistant penicillin, clindamycin or metronidazole, and a third generation cephalosporin or an aminoglycoside concurrently is recommended till such

time antibiotic sensitivity reports are available. Antibiotics must be given for prolonged duration till the abscess has fully resolved. In early cases it may be difficult to differentiate cellulitis from abscess. CT scanning is very useful in deciding the need and timing of surgery. MRI is superior but may not be possible on many occasions either due to the high cost or nonavailability. With early diagnosis of cellulitis of deep neck spaces and proper use of antibiotics, more and more cases can be treated by medical management alone [4,5]. In our opinion, transoral route is the best way to drain an acute retropharyngeal abscess unless there is an extension into the parapharyngeal space, when external approach is preferable. It is recommended that patients suffering from Quinsy should undergo tonsillectomy after 6-8 weeks. Recurrence would generally mean reappearance of a partially treated abscess. Deep infections occurring at different sites at different times would also amount to recurrence. Extension of abscess from one space to another is seen in many cases. Recurrences of the same abscess usually do not occur if treated fully. In our case, the exact cause of the retropharyngeal abscess remains debatable.

Deep neck abscesses most commonly occur as a result of some infective focus in the pharynx, oral cavity or teeth. After the abscess has been treated the infective focus should be looked for and treated so that recurrences can be prevented. Important complications of neck abscesses are airway obstruction, jugular thrombophlebitis, descending suppurative mediastinitis, septic pulmonary foci, carotid rupture, aspiration pneumonia and extension to adjoining neck space. An acute retropharyngeal abscess in adult is a rare presentation and usually follows trauma or penetrating foreign bodies. Whether occurrence of multiple deep neck space infections at different times is significant or coincidental is debatable.

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