



Deep Neck Space Infections: An Experience in Rural District Level Hospital

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Abstract

The general tendency of reduction in life threatening infections in the post antibiotic era is also seen in deep neck space infections. However for patients who develop deep neck space infections, the morbidity is high. Factors associated with increased incidence of deep neck space infections are diabetes mellitus, HIV, AIDS. Our study is a prospective analysis of 25 cases of deep neck space infections over a period of 1 year in a district hospital.

Keywords: Deep neck space, Infections, Anaemia, Airway, Management.

Introduction

In the past deep neck space infection were fairly common and were a source of considerable morbidity and mortality. Causes for deep neck space infection are pharyngotonsillitis, dental caries, foreign bodies, fracture mandible, parotitis, intravenous drug abuse, peritonsillar abscess, Bezold's abscess. Deep neck space infections are often of mixed bacterial flora. The advent of better laboratory testing, radiological investigation, availability of broad spectrum antibiotics and early surgically intervention has drastically reduced its incidence. DNSIs are often of mixed bacterial flora.^{1,2} Deep neck space infections are a neglected entity due to ambiguity of nomenclature of anatomy of neck spaces. This study aims at understanding the changing trends in etiology, bacteriology and different modalities of imaging in neck space infections. Our study is a prospective analysis of 25

cases of DNSIs over a period of 1 year in a district hospital.

Materials and Methods

This prospective study is carried over a period of 1 year in a district hospital between July 2019 and June 2020. All patients with a diagnosis of deep neck space infections and treated at our hospital were analyzed over a period of one year. The following parameters were studied i.e. demography, duration of hospital stay, existing immune-compromised status, attributable origin of infection, spaces involved, antibiotics used, outcome of illness and occurrence of anaemia in these patients.

Results

Of the 25 patients studied, there were 14 male and 11 female patients. Age distribution was from 12 years to 70 years with a mean age of 32.5 years.

Hospital stay varied from 4 to 24 days with average duration of stay was 9.24 days. The duration of 24 days stay was seen in a patient with multiple space infection involvement. The following conditions leading to immunocompromised status were detected: Diabetes mellitus – 11(44%), Chronic renal failure – 1(4%), Post chemo-radiotherapy – 1(4%), MDR Tuberculosis – 1(4%).

No causes for deep neck space infections could be detected in 12 (48%); caries teeth was detected in 7 (28%), chronic tonsillitis in 4 (16%), acute parotitis in 2(8%). The distribution of deep neck spaces involved in our series of 25 patients in descending order were; parapharyngeal space - seven, multiple spaces - five, submandibular space -five, and Ludwig's angina– three, parapharyngeal space three and masseteric space – two.

The numbers of patients of deep neck space infections having anaemia by WHO definition were 18 (72%). Out of these patients having hemoglobin level less than 10 g/dl were 5 (27.7%). A significant number of patients were found to be suffering from anaemia.

In 10 of the deep neck space infections, a combination of three drugs to cover gram positive organisms, gram negative organisms and anaerobes were used. Two drugs combination to cover gram positive organisms and anaerobes or gram positive and gram negative organisms was used in 13 patients. Single drug was used in two cases. Final antibiotic selection was done on the basis of culture and sensitivity report. Incision and drainage was done for all cases of deep neck space infections. All patients recovered fully.

Discussion

Deep neck space infections are dreadful infections and are still a potentially life threatening condition with considerable mortality even in this era of modern medicine. This is due to delayed presentation of the patient to a tertiary centre and frequent association with fatal complications as a result of close proximity to aerodigestive tract and major vasculature of neck.^{3,4} With the ever increasing number of cases of diabetes mellitus, a

significant association between these and deep neck space infections (44%) is seen in our study. In a significant number of patients, caries teeth was found to be the cause for the deep neck space infections (28%). No cases of IV drug abuse, trauma or foreign bodies were seen as attributable causes of the neck infection submandibular space and Ludwig's angina together were the major contributors to the neck space infections.

Deep neck space infections are often of mixed bacterial flora. The literature often mentions gram positive and gram negative organisms, such as *Streptococcus viridans*, *Staphylococcus epidermidis*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *E. coli*, *Haemophilus influenzae* and anaerobes.⁵

It is felt that, the first line of antibiotics chosen should cover all three groups of organisms. The drugs used in our series were mainly parenteral ciprofloxacin, penicillin, cefotaxime along with gentamycin, amikacin and metronidazole in different combinations. However culture and antibiotic sensitivity should remain the guideline for use of correct antibiotics.

Role of regular dressings with antiseptics, such as povidone iodine is seldom highlighted in the literature. We have a routine, of neck wound dressings with povidone iodine IP 5% W/V soaked pads twice daily till significant wound healing occurs.

As per the WHO expert group guidelines, cut-off figures of haemoglobin levels for diagnosis of anaemia are as follows : Adult male 13 g/dl, adult female (non pregnant) 12 g/dl, adult female (pregnant) 11 g/dl, children six months to six years 11 g/dl and children six years to 14 years 12 g/dl. By the above definition, 72% of our patients had anaemia. Patients with haemoglobin of less than 10 g/dl were 27%. Anaemia could be contributing to morbidity and also to the onset of neck space infections. We feel correction of anaemia with blood transfusions in patients of deep neck space infections and reduction of anaemia in the general population by preventive measures would significantly help patients with deep neck space infections and reduce its incidence.

Conclusion

Deep neck space infections are not an infrequent occurrence. Anaemia was present in a highly significantly number of our cases. We recommend the early diagnosis and treatment to reduce morbidity and mortality of deep neck space infections.

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