



Deep Neck Space Infections: A Retrospective Study

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Abstract

Introduction: *The complexity and the deep location of this region make diagnosis and treatment of infections in this area difficult. These infections remain an important health problem with significant risks of morbidity and mortality.*

Objective: *To review the clinical findings, causative organisms and treatment in deep neck space infections.*

Methodology: *A retrospective study was carried out 2014 to 2016 at department of E.N.T in IPGME&R and SSKM medical college and hospital. Total of 40 patients were selected for the study.*

Results: *In our study most of the patients (adults) are aged between 31 to 50 years and children aged between 2 to 7 years. In our study most of the deep neck space infections are due to pharyngotonsillar origin followed by odontogenic, traumatic and unknown origin. In our study swelling is the most common sign followed by dental caries, trismus and neck rigidity. In our study most of the patients treated with external incision and drainage followed by intra oral incision and drainage, some patients treated conservatively or medical treatment only. In our study staphylococcus aureus, streptococcus, anaerobes are commonly involved. In our study all patients were followed up and no patient had recurrence.*

Conclusion: *Deep neck space infection remains a common disease for otorhinolaryngologists, and should be treated on emergency basis. In developing countries, lack of adequate nutrition, poor oral hygiene, tobacco chewing, smoking and beetle nut chewing has led to an increased prevalence of dental and periodontal diseases. In present study, pharyngotonsillar infections were the most common etiological factor followed by odontogenic causes for deep neck space infections.*

Keywords: *Deep Neck Space Infection, Microbiology, Neck spaces, Treatment.*

Introduction

Formerly, infections of the deep fascial spaces of the head and neck were fairly common and were a source of considerable mortality and morbidity. The advent of antibiotics has reduced the overall number of deep neck space infections and their respective complications.

Proper treatment requires knowledge of the various fascial planes that infections travel along to ensure complete and adequate drainage.

- Infections of the deep neck spaces present a challenging problem for several reasons:

1) Complex anatomy

- 2) **Deep location:** difficult to palpate and impossible to visualize externally at the initial stage.
- 3) **Difficult access** and
- 4) **Close proximity to important structures.**

A retrospective study was carried out 2014 to 2016 at department of Otorhinolaryngology at IPGME&R and SSKM medical college and Hospital, KOLKATA. Total of 40 patients were selected for the study.

Inclusion Criteria: patient’s history, physical examination, radiology: x-ray neck -AP and Lateral views., ultrasonography, Needle and aspiration: Culture and sensitivity studies.

Results and Analysis

This discussion is based on the study of 40 patients who were treated in IPGME&R and SSKM medical college and Hospital, KOLKATA during 2014 to 2016 for a period of 3 years.

Table 1: Age incidence of Deep neck space infections

SL.NO	Age in years	40 patients	%percentage
1.	0-1	2	5
2.	2-7	6	15
3.	8-14	5	12.5
4.	15-30	6	15
5.	31-50	13	32.5
6.	51-70	7	17.5
7.	Above 70	1	2.5

Table 2: Sex incidence of Deep Neck space infections

Sl.No	Sex	40 Patients	%Percentage
1.	Male children	5	12.5
2.	Female children	4	10
3.	Adult female	15	37.5
4.	Adult male	16	40

Table 3: Incidence of specific neck abscess

Sl.No	Site Of Abscess	40 Patients	Percentage
1.	Submandibular and /or parotid	36	90
2.	Retropharyngeal	2	5
3.	Parapharyngeal	2	5

Table 4: Source of deep neck space infections

Sl.No	Source	40 Patients	%Percentage
1.	Odontogenic	10	25
2.	Pharyngotonsillar	20	50
3.	Otogenic	1	2.5
4.	Traumatic	0	0
5.	Others	9	22.5

Table 5: Presenting symptoms of deep neck space infections

Sl.No	Symptom	40 Patients	% Percentage
1.	fever	20	50
2.	pain	25	62.5
3.	odynophagia	5	12.5
4.	dysphagia	15	37.5
5.	Voice change	2	5

Table 6: Signs of deep neck space infections

Sl.No	Signs	40 Patients	% Percentage
1.	Swelling	30	75
2.	Trismus	12	30
3.	Neck Rigidity	10	25
4.	Dental Caries	16	40
5.	Pharyngo-Tonsillar Infection	14	35
6.	Laryngeal Infection	10	25

Table 7: Treatment of deep neck space infections

Sl.No	Treatment	40 Patients	% Percentage
1.	Medical	17	42.5
2.	External I&D	21	52.5
3.	Internal I&D	2	5

Table 8: Microbiology of deep neck space infections

SL. NO	ORGANISM	40 PATIENTS	% PERCENTAGE
1.	STAPHYLOCOCCUS	8	20
2.	STREPTOCOCCUS	0	0
3.	TUBERCLE BACILLI	4	10
4.	H.Influenza	0	0
5.	NO organism	28	70

Discussion

- Deep neck space infections not only involves adults between 2nd and 4th decade but also pediatric population. In our study most of the patients (adults) are aged between 31 to 50 years and children aged children aged between 2 to 7 years
- Previously most of deep neck space infections are pharyngotonsillar origin. But in paediatric population these are mainly due to pharyngotonsillar origin.
- Recently intravenous drug abusers , tuberculosis , HIV are the sources of deep neck space infections.
- In our study most of the deep neck space infections are due to pharyngotonsillar origin followed by odontogenic , traumatic and unknown origin.
- Deep neck space infections usually presents with fever, pain and neck swelling and also dental pain, odynophagia, dysphagia, voice change, occasionally nasal obstruction .
- In our study fever, pain are most common symptoms followed by dental pain, odynophagia, dysphagia.

- Signs of deep neck space infections are swelling, trismus, dental caries, neck rigidity.
- In our study swelling is the most common sign (at late presentation) followed by dental caries, trismus and neck rigidity.
- Most common complication of deep neck space infections is airway obstruction, rarely mediastinitis, haemorrhage from great vessels, cranial nerve palsies, septic thrombophlebitis.
- Main stay of treatment of deep neck space infections is incision and drainage which is either external or internal .
- In our study most of the patients treated with external incision and drainage followed by intra oral incision and drainage ,some patients treated conservatively or medical treatment only.
- Microbiology of deep neck space infections mainly contain mixed flora which consists of streptococcus pyogenes, staph.aureus, anaerobes (peptostreptococci, bacteroids).
- Rarely gram negative rods like H.influenza, Klebsiella are common in immunocompromised, debilitated patients, diabetics, organ transplants, patients who are in chemotherapy.
- Methicillin resistant staph.aureus is common in intravenous drug abusers.
- In our study:
- Staphylococcus aureus were mostly found followed by TUBERCLE bacilli,
- And no patient had recurrence.
- And the average hospitalization stay of deep neck space infections is 10 days.

Conclusion

Deep Neck Space Infections should be treated aggressively and promptly. Old age, diabetes and immunocompromised status associated with neck infection may lead to complications and hence should be evaluated at the earliest and given aggressive treatment.

The submandibular space involvement was the most common.

Staphylococcus and Tubercle bacillus in India are the main microorganisms involved in this condition.

Smoking and Alcohol consumption were the most common social habits –steps like counselling and medications to help stop them should be initiated.

CT is the investigation of choice for diagnosis of Deep Neck Space Infection.

All patients should be started with intravenous antibiotic therapy preferably culture directed.

Deep neck space infection associated with septic shock and mediastinitis have high morbidity and mortality rates and needs prompt and appropriate intervention

Early suspicion, prompt diagnosis and aggressive treatment are essential.

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