



Neck Abscess- An Epidemiological Study in a Tertiary Care Centre

Authors

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Abstract

Neck abscess still pose a problem in many parts of the country. Identifying the risk factors and initiating treatment at the correct time can avoid many complications. We present an epidemiological study of 59 cases with neck abscess. It was common in the middle age, more in females. Peritonsillar abscess was the most abundant site (32.2%) and staphylococcus species was the one most commonly isolated in 16.94 % of the patients. Tuberculosis was found as cause in 4 patients. Incision and drainage was done to drain the pus and parenteral antibiotic changed according to culture sensitivity reports. Acute renal failure, respiratory obstruction and septic shock were the complications encountered.

Keywords: neck abscess, incision and drainage, diabetes mellitus, staphylococcus.

Introduction

Neck abscess occur as a result of infection of the neck spaces. Though the incidence of neck abscess has largely decreased due to the advent of antibiotics, they still pose a problem especially in rural areas. The problem is multiplied if the patient is immunocompromised and it is not so rare to see such patients presenting for the first time with complications. Timely intervention in the form of drainage of the abscess and institution of proper antibiotics can control this problem that otherwise can even result in respiratory obstruction and death. In this backdrop it is extremely important to know the commonest pathogens involved, in order to guide the selection of empirical antibiotic to be used. We

are undertaking this study with the hope to throw some light on the predisposing factors, presentations and to identify common pathogens causing neck abscess in our community.

Materials and Methods

This is a retrospective study done in a tertiary care centre from February 2015 to March 2018. All patients who presented to the ENT outdoor and casualty with features of neck abscess and met the inclusion criteria were taken up for the study after obtaining proper informed consent. The inclusion criteria included patients of all age groups and both sex, who were willing to take part in the study, documented abscess in the neck clinically and by Ultrasonography or fine needle aspiration

cytology wherever possible. We excluded patients who had previously undergone drainage procedures, those with only inflammatory oedema and no abscess demonstrable and those who did not give consent for the study. There were 59 patients in the present study. A detailed history was taken including the onset and duration of symptoms, comorbidities like diabetes mellitus, hypertension, steroid intake and any immunocompromised state. Associated symptoms like fever, dysphagia, respiratory difficulty were noted. Patients were subjected to ultrasonography and fine needle aspiration cytology where possible. Where ever required, additional investigations like laryngeal endoscopy, chest X-ray, Orthopantomogram and Computed tomography were performed. Incision and drainage of the abscess was done and pus sent for culture sensitivity, gram staining and CBNAAT (cartridge based nucleic acid amplification test) when tuberculosis was suspected. Routine blood investigations were done. Patients were started on broad spectrum antibiotics and the same changed accordingly when the culture sensitivity reports were available. The data collected were compiled and analyzed and compared with the previous studies.

Results

Out of the 59 patients in our study, 24 were males and 35 were females. (male :female = 1:1.46). The age distribution was as shown in table-1. The mean age of the study group was 52.79 years and majority were between 40 and 60 years. 12 of the patients were referred from outside, had already received oral antibiotics. The commonest comorbid condition detected was diabetes mellitus

(28.8%), of which 5 (29.4%) were already known diabetics on antiglycemic drugs. Rest were detected with high blood sugar after admission and investigations. The next in line was hypertension (18.6%) followed by chronic renal dysfunction. One patient required emergency tracheostomy as he had acute respiratory obstruction. Death occurred in 2 patients with peritonsillar abscess due to acute renal failure and in one patient with parotid abscess due to sepsis. Peritonsillar abscess was the commonest type of abscess followed by superficial abscess and then abscess in the submandibular and submental spaces (Table- 2). Dysphagia was the main complaint in patients with peritonsillitis where as it was swelling and dysphagia in the submental and submandibular group. Retropharyngeal abscess was diagnosed in 3 patients and all of them required CT scan of the neck. One patient of retropharyngeal abscess had progressive weakness of one side of the body and MRI showed retropharyngeal abscess with prevertebral abscess compressing the spinal cord. The commonest organism isolated was staphylococcus (aureus & epidermidis) followed by Klebsiella pneumonia. 17 samples yielded no growth in culture. Mycobacterium tuberculosis was isolated from one retropharyngeal abscess and 3 superficial abscesses (Table-3). All patients were treated with intravenous antibiotics, that was changed according to the culture sensitivity reports. Insulin was started and blood sugar levels controlled in diabetic patients. The mean hospital stay was maximum for abscess in the parotid region and minimum was for peritonsillar abscess.

Table 1: Age and gender distribution of the study population

Age group	<20 years	20-40 years	40-60 years	60-80 years	>80 years	Total
Males	2	7	14	1	0	24
Females	1	9	21	3	1	35

Table 2: Site involved by the abscess

Neck space	Number	Percentage
Submental	9	15.2%
Submandibular	11	18.64%
Parotid	7	11.86%
Peritonsillar	19	32.2%
Parapharyngeal	6	10.16%
Retropharyngeal	3	5.08%
Superficial	12	20.33%
Others	1	1.69%
2 space involvement	5	8.47%
Multiple space involvement	3	5.08%

Table 3: Causative organism detected from the abscess

Causative Organism	Number of cases	Percentage
Staphylococcus (aureus & epidermidis)	10	16.94%
Klebsiella pneumonia	7	11.86%
Pseudomonas aeruginosa	5	8.47%
Mycobacterium tuberculosis	4	6.77%
Streptococcus	3	5.08%
Peptostreptococcus	1	1.69%
Fusobacterium	1	1.69%
Mixed growth	11	18.64%
No organism isolated	17	28.81%

Discussion

Neck abscess is a prevalent problem in the present era mainly in rural population. Female patients were comparatively more in our study population. But a similar study by Huang et al had a 58.9% of males in their study population^[1]. Gtujrati et al also stated that males were more likely to have deep neck space infections when compared to females^[2]. Almost all studies show that immunocompromised patients are more prone for severe and prolonged infections. Seyyed Jafar et al^[3] in his work of 815 patients found 5.6 % patients to have associated diabetes mellitus and 3.1% to have chronic renal failure. Kataria et al^[4] found diabetes mellitus to be the commonest comorbid condition in 10.52 % of their patients whereas it was 30.2 % in Huang et al study^[1]. The findings of our study are comparable with these studies as the most commonly detected comorbidity was diabetes mellitus. Looking at the site involved, the results published by various authors vary a little. Submandibular space was found to be the commonest site involved by Bakir S et al (26.1%)^[5] whereas it was parapharyngeal space (28.89 %) in Sharma et al study^[6], Ludwigs

angina in Larawin .V et al^[7] (37%) and Kataria et al study. Lateral pharyngeal wall abscess was maximum in work by parhiskar et al^[8]. But however the submandibular, peritonsillar and parapharyngeal spaces are more commonly involved in almost all studies when compared to other spaces like retropharyngeal, parotid or masticator spaces. The reasons for this may be because of the higher rate of tonsillar and dental infections that can lead to infection of these spaces. Peritonsillar and superficial infections were the ones that we came across in our study population.

Pus culture is helpful in detecting the causative organism and to know the antibiotic sensitivity patterns. We ensured that every abscess that underwent drainage had the pus sent for gram stain, pus culture and sensitivity. In 28.81% (17) patients, no organism could be isolated. This could be because the patients had received antibiotics prior to collection of specimen, due to the labile organisms and because some organisms need special culture requirements to be able to isolate them. The commonest organism that was isolated was staphylococcus, followed by

Klebsiella. Klebsiella and Pseudomonas were commoner in diabetics than non diabetics. Literature shows similar results like Huang et al who found streptococcus viridians and klebsiella to be the commonest isolated organisms^[1], whereas streptococcus and staphylococcus were the maximum isolates in Gujarari et al and Kataria et al study population^{[2],[4]}.

Mycobacterium tuberculosis is an organism that is less recorded in the literature as a cause of neck abscess. But since india is a country in which tuberculosis is so prevalent, it should always be kept in mind as a differential diagnosis. Acid fast staining and CBNAAT helps in the diagnosis.

All neck abscess are dangerous if not identified and treated correctly. The complications that can arise include respiratory difficulty, mediastinal extension, necrosis, septic shock and even death. 8.7% patients needed tracheostomy and another 8.7% succumbed to infection as reported by Larawin et al.^[7]. Vieira et al reports complications like jugular vein thrombosis acute respiratory distress syndrome and disseminated intravascular coagulation.^[9] Ndukwe et al said that out of 103 patients studied, 2 patients expired due to complications^[10] Diabetes mellitus, involvement of multiple spaces, females, presence of neck swelling and respiratory difficulty are sited as potential predictors of complications in literature.^{[11],[12]} There should be low threshold for undertaking surgical procedures like incision and drainage or aspiration. This will prevent complications from developing. If complications arise a multidisciplinary treatment may be required.

Conclusion

Neck abscess though seems simple can lead to devastating complications if not identified and treated properly. Incision and drainage of the abscess should always be undertaken unless otherwise contraindicated. Staphylococcus is the most prevalent organism, so any empirical antibiotic started should cover it. Tuberculosis

should be kept in mind as an important cause because of its high prevalence in our country.

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