

## Original Article

# Deep Neck Abscess: Still A Delimma For Developing Countries: A Prospective Study of 54 Cases

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## ABSTRACT

**Objective:** To determine the changing trends with in our population with respect to presentation, etiology, location and microbiology of deep neck abscess (DNAS).

**Place & Duration :** Department of ENT and Head & Neck surgery Peoples University of Medical & Health Sciences Hospital, Nawabshah from 1st May 2011 to 31st December 2011

**Patients & Methods:** 54 clinically confirmed cases of DNAS were included the abases was confirmed by needle aspiration in all cases. Incision & drainage was done at earliest stage & the pus was sent for culture & sensitivity analysis before start of treatment with antibiotics. All patients (except Penicillin sensitive) were initially started on combination of injectable ampicillin, gentamycin and metronidazole. The antibiotics were modified as per culture & sensitivity repots or clinical unresponsiveness if required & the symptomatic treatment was given accordingly. Clinical charts, radiological & bacteriological studies & interventions, along with demographic profile & details of hospital stay were recorded & result were tabulated.

**Results:** Among 54 cases 36(66.6%) were male & 18(33.3%) were female, majority 63% were belong to low socioeconomic strata. Tobacco chewing was the most common addiction followed by smoking. Dental carries was seen in 15 patients and poor dental hygiene in 28 cases. Tooth extraction was found the most predisposing factor. Submandibular region was the most common (37%) site of the abscess & pain was the most common presenting symptom. The culture was positive in 18 cases and staphylococcus aureus was isolated in 15% cases followed by streptococcus in 7% cases. Antibiotic treatment was changed in six patients according to sensitivity reports & was given for maximum for 14 days. All patients recovered fully without complications.

**Conclusion :** We observed that the high incidence of DNAS could be attributed to the lack of awareness, illiteracy and poverty among patients, along with the poor primary health infrastructure. We also recommend early surgical intervention in these cases to decrease the prevalence of complication.

**Key words:** Neck; Abscess; Diagnosis, Differentiate.

## INTRODUCTION

The advent of modern antibiotics and surgical techniques has resulted in fewer complications and deaths following neck abscesses (DNAS). But the number of DNAS

encountered remains the same, due to the lack of infrastructure at the primary health level. The unhygienic living conditions in urban slums and lack of awareness among the patients contribute to the high incidence of patients presenting with large abscesses.

## MATERIAL & METHODS

Patients with a diagnosis of DNAS who were managed at the department of ENT and head and neck surgery, Peoples University of medical & health sciences hospital Nawabshah between May 2011 and December 2011 were included in the study. Superficial skin abscesses, abscesses due to infection of external neck wounds and abscesses in relation to mastoid and fascial bone fractures were excluded from the study.

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Only clinically confirmed cases of abscesses were included in the study. Needle aspiration was done in all cases to confirm the abscess and incision and drainage were done at the earliest stage. Pus was sent for culture and sensitivity analysis prior to the start of antibiotic treatment. All except patient with penicillin sensitivity, were initially started on combination of injectable Ampicillin gentamycin and metronidazole. The antibiotics were modified as per culture and sensitivity reports or clinical unresponsiveness if required. Supportive therapy in the form of intravenous fluids, analgesics, anti pyretics, anti emetics, mouth washes etc was given as a symptomatic treatment. All patients were kept under observation for impending or manifest respiratory distress. Tracheostomy was done in four patients.

Radiology and dental referrals were sought in appropriate cases. Clinical charts, radiological and bacteriological studies and interventions, along with demographic profile and details of hospital stay were reviewed. Socioeconomic status along with literacy rates was determined for all patients.

## RESULTS

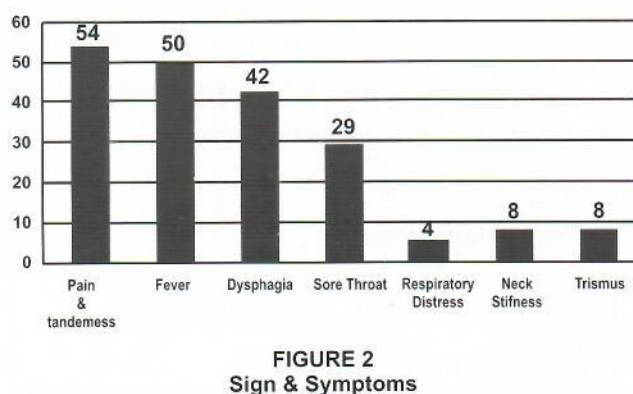
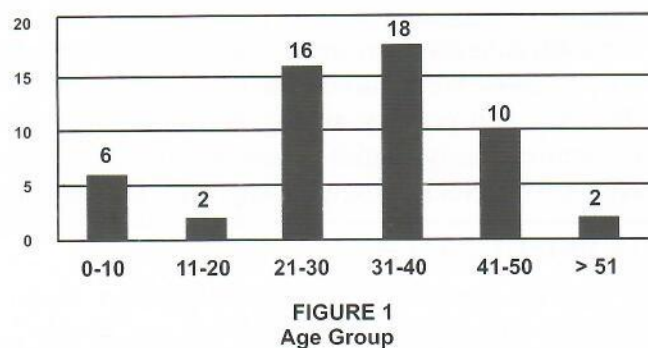
Fifty four patients were including in the study. Thirty six were males (66.6%) and 18 (33.3%) were females. The youngest patient was two years old and the oldest was 62 years old. The age distribution of patients is given in figure 1.

The socioeconomics status of all the patients was determined. 93% belonged to low socioeconomic strata, 74% were illiterate and none of the patients admitted in our hospital were aware of the potential complications of DNAS, 63% of the patients were unaware of any primary health centers in their vicinity. The rest were referred from primary health centers due to lack of proper medical care available there. Diabetes (14.8%) was the most commonly encountered systemic disease. All were unaware of the same and presented with DNAS. Tobacco chewing was the most common addiction followed by smoking (Table I).

Dental carries was seen in 15 patients and dental hygiene was poor in 28 patients. Tooth extraction was found to be the most common predisposing factor for the abscess. Ten patients who had undergone dental manipulations were unaware of

sterile surgical techniques. The average duration after which the patients presented to the hospital was eight days. The distribution of the abscesses according to the site of involvement is given in table 2. The most common encountered site was the submandibular region (37%), followed by submental region. Pain was the most common presenting symptom, followed by fever and dysphagia. Neck stiffness and trismus was present in eight patients. Four patients had respiratory distress (Fig2). In 36 (66%) cases the culture was negative and positive in 18 of the patients (33%). Staphylococcus aureus was isolated in 15% followed by streptococcus species in 7 percent and other bacteria isolated table 3.

Tracheostomy was performed in four patients with diagnosis of Ludwig's angina, retropharyngeal and parapharyngeal abscesses, as they had developed respiratory distress. Incision and drainage were done in 50 patients within 48 hours of the start of the antibiotic treatment. Pus was aspirated in four cases (Table 4). Antibiotic treatment was changed in six patients, according to sensitivity reports and was given for maximum 14 days. All patients recovered fully without complications.





**Table 01**  
**Addiction**

Adduction	Number
Tobacco Chewing	28
Smoking	22
Alcohol	12
Other	06

**Table 02**  
**Site of Abscess**

Site of Abscess	Number
Submandibular	20
Sub mental	10
Peritonsillar	03
Parapharyngeal	06
Retropharyngeal	04
Lundwig's Angina	06
Parotid	05

**Table 03**  
**Bacteriology**

Bacteria	Number
Sterile	36
Staphylococcus Aureus	08
Streptococcus	04
Klebsiella Spp	03
Proteus Spp	01
Enterococcus Spp	01
Pseudomonas Spp	01

**Table 04**  
**Surgical Interventions**

Surgery	Number
Incision & drainage	50
Tracheostomy	04
Repeated Aspirations	04

## DISCUSSION

Deep neck abscesses are more prone to spread along the fascial planes of neck thus easily complicated by the involvement of vessels and neck organs<sup>1</sup>. if the spread of inflammation occurs towards the mediastinum, due to the communication between medial and deep fascial layers with the mediastinum, mortality rate increases<sup>2,3</sup>. The propensity towards the mediastinitis is most commonly associated with the retropharyngeal abscesses<sup>4</sup>. Fatal Pyothorax, due to secondary involvement of pleura following mediastinitis in a case of massive acute retropharyngeal abscess has also been reported<sup>5</sup>. Salinger and pearlman<sup>7</sup> have reported a mortality rate of approximately 80% in 32 patients with haemorrhage from retropharyngeal abscess. Alexander et al<sup>8</sup>. Suggested that rupture of major artery of the neck secondary to neck abscess has a mortality rate of 20 to 40%, regardless of treatment given. Reisner et al<sup>9</sup> have reported endovascular occlusion of the carotid pseudo aneurysm in a child with DNAS. Similarly Singh et al<sup>10</sup> have described a case of carotid artery erosion in a four year old child following parapharyngeal space infection which was successfully treated by carotid ligation. Lack of primary health care and awareness amongst people residing in urban slums were found to be the factors most strongly associated with DNAS in our study. Tobacco chewing was the most common substance abuse in our patients, followed by smoking. Poor dental hygiene and dental infections, which are commonly seen in people in their thirties, are associated with increased incidence of DNAS. Systemic disorders such as diabetes mellitus was found in 20% of patients. Patients with diabetes were not managing their condition properly. Consistent with other authors, the most positive cultures were found to be polymicrobial<sup>11</sup>, and the most commonly



identifiable single organism in our series was *Staph aureus*, found in 15% of cases, as against 54% by Thompson et al<sup>12</sup>.

We believe the time tested combination pencylline, gentamycin metronidazole is still effective for most of the patients, provided early incision and drainage are under taken. We recommend early incision and drainage as the standard treatment of choice for all DNAs. We performed incision and drainage in all 50 patients who presented to the hospital within 48 hours of their admission. The remaining 04 patients were managed by repeated aspirations. We were able to completely avoid complications by early aggressive management. We believe that air way management is the most important means of treating DNAs. With strict observation for respiratory distress we were able to avoid any mortality due to airway problems. Patients with Ludwig's angina with oedema of the floor of mouth indicate a need for awake elective tracheostomy. We avoided any airway complication by this method in three patients in our study. Early diagnosis aggressive surgical management and proper airway management are important factors in decreasing mortality associated with DNAs. An other observation in our study was the fact that significant money, man power and resources could be saved by the presence of primary health care. Also, higher levels of literacy and awareness could go a long way in decreasing the number of DNAs associated with other diseases.

The cost of prevention is much lower than that of care and we feel it is especially relevant for developing countries like ours that the major part of the county's health infrastructure be directed towards preventive health care.

## Conclusion

We are encountering a large number of deep neck abscesses due to lack of awareness and education among the population. Early surgical intervention decreases the prevalence of complications in these cases. A redirection of money, manpower and resources, towards primary health care would go a long way in reducing the incidence of DNAs in developing countries.

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