

Clinical profile of patients with deep neck space infections: a review from a tertiary care hospital

Introduction

Deep neck space infection (DNSI) is the infection in neck spaces and facial planes caused due to breach in natural barrier (cervical fascia) (1). DNSI are usually bacterial infections which may follow preceding infection such as odontogenic infection, tonsillopharyngitis or head and neck trauma. It presents as swelling, pain, fever, trismus, odynophagia, dysphagia, dyspnea, dysphonia and otalgia depending on the site of involvement. Those with immunocompromised status have greater prevalence, rapid progression and complication rate (2). Pediatric DNSI is a different entity in respect to adult DNSI. Due to immature immunity, they are more at risk of serious complications.(3) Early surgical intervention (incision and drainage) followed by antibiotic course is the treatment of choice for DNSI.

Aims & Objectives: To identify the clinical sign and symptoms, predisposing factors, co-morbidities, most commonly involved neck spaces, bacteriology and different complications related to DNSI among pediatric and adult age groups

Table I. Observations in deep neck space infection patients.

Total patients n=142	Adult patients (n=109)	Paediatric patients (n=33)	Total patients n=142	Adult patients (n=109)	Paediatric patients (n=33)
Gender ratio	1.43: 1 (70 M: 49 F)	1.09:1 (12 M: 11 F)	Causative/predisposing factors:		
Presenting symptoms:			Odontogenic	27 (24.8%)	2 (6%)
Swelling	95 (87.2%)	12 (42.4%)	Tubercular	11 (10.1%)	3 (9.1%)
Pain	80 (73.3%)	33 (100%)	Post FNAC	2 (1.8%)	1 (3%)
Dysphagia	42 (38.5%)	10 (30.3%)	Foreign body	5 (4.6%)	-
Fever	77 (70.6%)	28 (84.9%)	Suppurative lymphadenitis	16 (14.7%)	6 (18.1%)
Dyspnoea/stridor	9 (8.3%)	5 (15.1%)	Tonsillopharyngitis	3 (2.8%)	10 (30.3%)
Discharging sinus	11 (10.1%)	2 (6%)	Parotitis	7 (6.4%)	-
Trismus	44 (40.7%)	2 (6%)	Skin infection	4 (3.7%)	-
Toothache	38 (34.9%)	11 (33.3%)	Trauma	3 (2.8%)	-
Earache	21 (19.3%)	1 (3%)	Furunculosis	1 (0.9%)	-
Change in voice	22 (20.2%)	-	Thyroglossal cyst	-	1 (3%)
Torticollis	-	8 (24)	Unknown	30 (27.5%)	10 (30.3%)
Associated/Risk factors for complications			Sites involved		
Multifactorial	33 (30.3%)	9 (27.3%)	Multifocal site involvement	47 (43.1%)	7 (21.2%)
Diabetes mellitus	42 (38.5%)	-	Ludwig's angina	23 (21.1%)	3 (9.1%)
H/o ATT intake	11 (10.1%)	3 (9.1%)	Peritonsillar/Quinsy	26 (23.9%)	12 (36.7%)
Renal disease	2 (1.8%)	1 (3%)	Submandibular	50 (45.9%)	9 (27.2%)
HIV	2 (1.8%)	-	Parapharyngeal space	23 (21.1%)	1 (3%)
Elderly	30 (27.5%)	-	Retropharyngeal space	6 (5.5%)	7 (21.2%)
Children <10year	-	13 (39.4%)	Parotid	25 (22.9%)	-
Anaemia	10 (9.1%)	2 (6%)	Masticator	15 (13.8%)	-
Malnourishment	8 (7.3%)	7 (21.2%)	Anterior triangle neck	10 (9.1%)	2 (6%)
Hypothyroidism	1 (0.9%)	-	Posterior triangle neck	2 (1.8%)	-
Liver disease	3 (2.8%)	-	Prevertebral space	1 (0.9%)	-
Cardiac disorder	2 (1.8%)	-	Sublingual space	2 (1.8%)	-
Adverse drug reaction	1 (0.9%)	-	Submental	7 (6.4%)	1 (3%)
Drugs(chemotherapy/steroids)	3 (2.8%)	-	Treatment received		
Bacteriology:			I & D	60 (55%)	16 (48.5%)
No growth	46 (42.2%)	13 (39.4%)	I & D with debridement	4 (3.7%)	3 (9.1%)
Polymicrobial	30 (27.5%)	4 (12.1%)	I & D with tracheostomy	15 (13.8%)	2 (6%)
Staphylococcus aureus	23 (21.1%)	10 (30.3%)	I & D with debridement & tracheostomy	3 (2.8%)	-
Streptococcus	6 (5.5%)	2 (6%)	Needle aspiration and dilatation	21 (19.3%)	8 (24.2%)
Klebsiella	5 (4.6%)	1 (3%)	Conservative treatment	6 (5.5%)	4 (12.1%)
Pseudomonas	5 (4.6%)	3 (9.1%)	Complications:		
E. coli	5 (4.6%)	-	Mediastinitis	3 (2.8%)	1 (3%)
Candida albicans	1 (0.9%)	-	Septicaemia	5 (4.6%)	1 (3%)
Enterococcus	3 (2.8%)	-	Jugular vein thrombosis	1 (0.9%)	-
MRSA	4 (3.7%)	2 (6%)	Airway obstruction	2 (1.8%)	-
Mycobacterium tuberculae	11 (10.1%)	3 (9.1%)	Pericarditis	1 (0.9%)	-
Not done	11 (10.1%)	3 (9.1%)	Pleural empyema	1 (0.9%)	-
Surgery performed			Hematogenous dissemination	1 (0.9%)	-
Under general anaesthesia	37 (33.9%)	21 (63.6%)	Hypokalaemia	1 (0.9%)	-
Under local anaesthesia	66 (60.5%)	8 (24.2%)	Hypocalcaemia	1 (0.9%)	-
TLC count			ICU admission	2 (1.8%)	9 (27.3%)
<4000 per cu mm	3 (2.8%)	-			
4000-12000 per cu mm	11 (10.1%)	5 (15.2%)			
>12000 per cu mm	95 (87.1%)	28 (84.8%)			

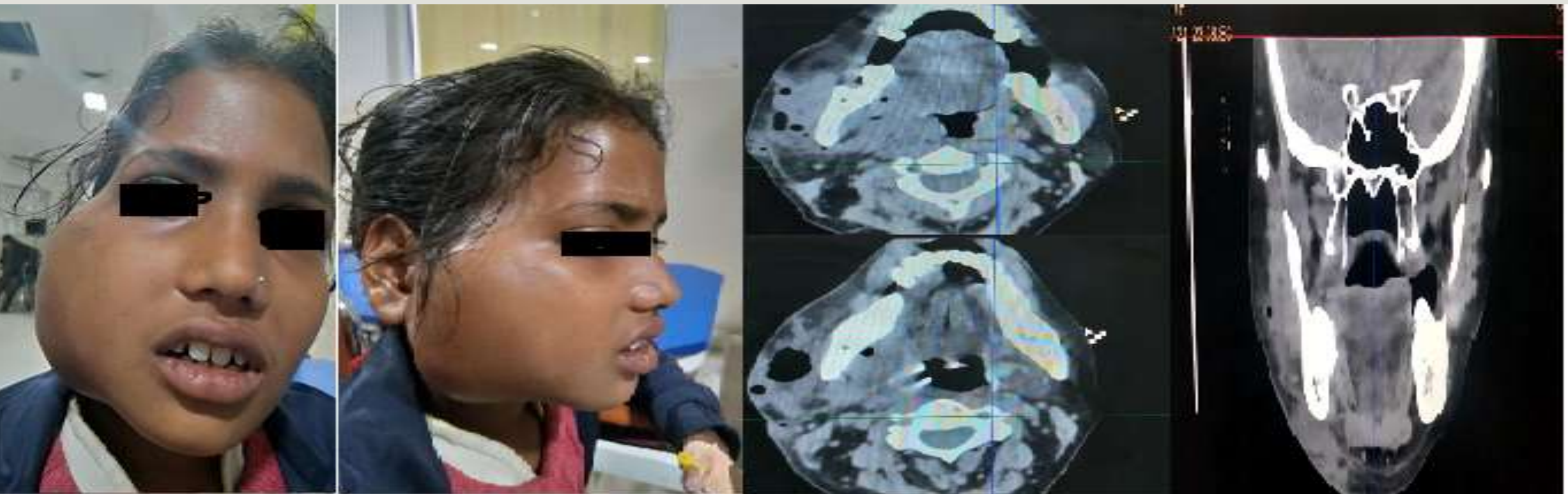


fig 1. 9 year old with rt sided submandibular and parotid abscess

Materials & methods

This retrospective study included 142 patients with DNSI (109 adult, 33 pediatric). Inclusion criteria: All patients with DNSI confirmed clinically or radiologically. Exclusion criteria: Malignancies and inflammatory swellings. Various factors were recorded and analyzed statistically.



fig 2. 23 year old female patient with submandibular and parapharyngeal space abscess



fig 3. 45 year old female patient with ludwig abscess

Results

Maximum patients reported were in 6th decade of life (18.3%). Male preponderance was seen (57.7%) with M: F ratio 1.3:1. Swelling (87.2%) in head neck region followed by pain (73.3%) were the commonest presenting complaints in adults while as pain (100%) followed by fever (84.9) were the commonest complaints of pediatric patients of DNSI. Most common etiological factor was odontogenic in adults 27 (24.8%) and tonsillopharyngitis in 10 (30.3%) pediatric patients. Multiple co-morbidities were reported in patients of DNSI with diabetes mellitus being the commonest (38.5%) comorbidity in adults and malnutrition (21.2%) amongst pediatric patients. The most common site involved amongst adults was submandibular space (45.9%) and peritonsillar space among pediatric patients (36.7%). Staphylococcus aureus was the commonest organism found in DNSI in both adults and pediatric patients (21.1% and 24.2% respectively). In surgical management, incision and drainage was done in 60 (55%) adult patients and 16(48.5%) pediatric patients. Among adults, Septicemia was the most common complication noticed in 5 (4.6%) patients. Among pediatric group one patient each suffered mediastinitis and septicemia.

Discussion

Our study has a unique feature comprising pediatric patients. Although antibiotic use has reduced DNSI incidence drastically but at extremes of age, DNIs occur relatively frequently and take an aggressive course due to immature immune system. The involvement of DNSI is in accordance with commonest adjacent anatomical proximity of causative factor (submandibular space in adults due to odontogenic cause and peritonsillar space in pediatrics due to tonsillopharyngitis). A contrast CT scan and contrast MRI are the most appropriate imaging tool for early diagnosis, exact localization of DNSIs and treatment planning. Patients with cellulitis underwent conservative management and those with abscess underwent incision and drainage. The author reported the upper airway obstruction as most common complication of DNSI for which tracheostomy was done. Patient's mean stay in hospital was 10.5 days.

Conclusion

There is difference between adult and pediatric patients of DNSI. DNSI is a challenge for otolaryngologists and high-risk groups needs special attention.

Recommendations

- 1.Maintain oro-dental hygiene and diabetes control.
- 2.Recognition of the classic signs of severe DNSI
- 3.Odontogenic source of infection should be removed early.
- 4.Pus culture should be obtained before starting empirical antibiotics
- 5.Attention to airway maintenance, appropriate antibiotic therapy, and judicious surgical intervention.

References

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