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Original Research Article

Fine needle aspiration cytology in diagnosis of cystic swelling of neck: a three year prospective study

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ABSTRACT

Background: Cystic lesion in the neck originates from lymph nodes, skin appendages, soft tissues, salivary gland or developmental anomalies of neck like branchial cleft. Present study has been designed to know the anatomical site of cystic swelling, dividing them in cystic, inflammatory, benign, and malignant groups.
Methods: FNAC was done using 22 gauge needles. The aspirated material was smeared on the slide and stained with Hematoxylin and Eosin 31 (H and E), Papanicoloau staining and stained with May Grunwald Giemsa (MGG) stain. Wherever suspicion of tubercular pathology was there ZN stain was used.
Results: Regarding distribution of organ involved in cystic swelling of neck, as per table 2, cystic swelling associated with thyroid was in 80 (40%) patients, cystic swelling associated with lymph node was in 86 (43%) patients, cystic swelling associated with salivary gland was in 20 (10%) patients, cystic swelling associated with soft tissue and miscellaneous was in 6 (3%) patients and non specific sample was seen in 4 (2 %) patients.
Conclusions: From present study we can conclude that that mean age of the patients was 34.66±4.21 yrs and most of the patients were below 40 years of age and there was male predominance. In present study lymph node was most common organ with cystic swelling (43%) and thyroid (40%) was next to it. Salivary gland was third most common organ involved (10%). In our study Colloidal goitre was present in 38(19%) patients and tuberculosis was present in 42(21%) patients.

Keywords: FNAC, cystic swelling, Tuberculosis

INTRODUCTION

Cystic swelling of neck is frequent in clinical practice. It consists of variety of pathological entities ranges from benign to malignant. Cystic lesion in the neck originates from lymph nodes, skin appendages, soft tissues, salivary gland or developmental anomalies of neck like branchial cleft.[1,2] A proper clinical history and examination can suggest the diagnosis; radiological investigation can help in confirmation and assessment in anatomical extent of tumour.[3,4] Fine needle aspiration cytology is rapid, simple, cheap and safe technique for differential diagnosis of head and neck lesions.[5] After literature search we have observed that the spectrum of pathological diagnosis of cystic swelling of neck was concluded different by different author. Rathod et al from India has reported that 52% were of thyroid, 28.50% were of lymph node, 11% from salivary gland, and 4% from soft tissue and miscellaneous swellings. In inflammatory swelling (33%), tuberculous lymph node (42.12%) involvement is common than all other sites with male preponderance (55%).[1] Ahmad et al has concluded that concluded that tuberculosis lymphadenitis is still the commonest condition in patients presenting with neck swellings followed by non-specific lymphadenitis and malignant neoplasm especially

metastatic carcinoma.[2] Padia et al has concluded that most common diagnosis obtained in his study was of reactive lymphadenitis in 27.33% (38 cases) of cases.[6] Goyal et al has concluded that thyroglossal cyst is most common.[7]

Based on finding of above literature present study has been designed to know the anatomical site of cystic swelling, dividing them in cystic, inflammatory, benign, and malignant groups.

METHODS

This prospective observational study conducted in the department of pathology Konaseema institute of medical science Amalapuram from December 2018 to October 2021.

Study population

The study population include 200 untreated patients who attended the general surgery and otorhinolaryngology outpatient department Konaseema institute of medical science Amalapuram Andhra Pradesh. They have been selected for this study based on inclusion and exclusion criteria.

Inclusion criteria

All ages, cystic swelling of neck, all duration.

Exclusion criteria

Known cases of malignancy.

Ethics

This study is approved by institutional ethics committee. A written informed consent was taken from women before enrolment into this study.

METHODS

After enrolment of patients as per exclusion and inclusion criteria, detailed history was taken and clinical examination of patients was done. The material for this study consists of aspirated material from cystic swelling of patients. FNAC was done using 22 gauge needles. The aspirated material was smeared on the slide and stained with Hematoxylin and Eosin 31 (H and E), Papanicoloau staining and stained with May Grunwald Giemsa (MGG) stain. Wherever suspicion of tubercular pathology was there ZN stain was used.

Sample size calculation

Based on prevalence of cystic swelling in neck to be 14% based on previous study, level of confidence interval 95% and precision of 5% sample size was calculated to be 186 by using online calculator.[8-10]

Statistical analysis

Data obtained was entered into Statistical package for social sciences (SPSS) 16.0 software and data was analysed as mean and percentage.

RESULTS

In present study as per selection criteria and statistical calculation of sample 200 patients were enrolled for this study.

Table 1: age and sex distribution of patients with cystic swelling of neck.

Variable		Number	Percentage
Age (mean= 34.66±4.21 years)	Less than 20	25	12.5
	21 to 30	80	40
	31 to 40	75	37.5
	More than 41	20	10
Sex	M	122	61
	F	78	39

Table 2: Distribution of organ involved in cystic swelling of neck.

Organ involved	Number	Percentage
Thyroid	80	40
Lymph node	86	43
Developmental	4	2
Soft tissue and miscellaneous	6	3
Salivary gland	20	10
Non specific	4	2

Regarding age and sex distribution of patients with cystic swelling of neck, as per table 1 mean age of the patients was 34.66±4.21 years. Number of patients less than 20 years were 25 (12.50%), between 21 to 30 years were 80 (40%), between 31 to 40 years were 75 (37.5%), and more than 41 years were 20 (10%). There was male predominance and male to female ration was 1.43:1.

Regarding distribution of organ involved in cystic swelling of neck, as per table 2, cystic swelling associated with thyroid was in 80 (40%) patients, cystic swelling associated with lymph node was in 86 (43%) patients, cystic swelling associated with salivary gland was in 20 (10%) patients, cystic swelling associated with soft tissue and miscellaneous was in 6 (3%) patients and non specific sample was seen in 4 (2 %) patients.

Regarding distribution of lesions in various organs involved having cystic swelling, inflammatory lesion was present in 18 (9%) patients. Colloidal goitre was present in 38 (19%) patients; thyroglossal cyst was present in 4 (2%) patients, follicular lesion was present in 6 (3%) patients and Hurthle cell tumour was present in 4 (2%) patients. Papillary carcinoma of thyroid was present in 8

(4%), medullary and Anaplastic carcinoma of thyroid was present in 1 patient each.

Table 3: Distribution of lesions in various organs involved.

Lesions in various organs			N	%
Thyroid	Inflammatory		18	9
	Benign	Colloid goitre	38	19
		Thyroglossal cyst	4	2
		Follicular lesion	6	3
		Hurthle cell neoplasm	4	2
	Malignant	Papillary carcinoma	8	4
		Medullary carcinoma	1	0.5
		Anaplastic carcinoma	1	0.5
Lymph node	Reactive changes		16	8
	Inflammato-ry	Tuberculosis	42	21
		Non specific	2	1
	Malignancy	Secondary	16	8
		Lymphoma	4	2
Salivary gland	Non specific		4	2
	Benign neoplasm		11	5.5
	Malignant		5	2.5
Soft tissue and miscellaneous	Nonspecific		4	2
	Benign		1	0.5

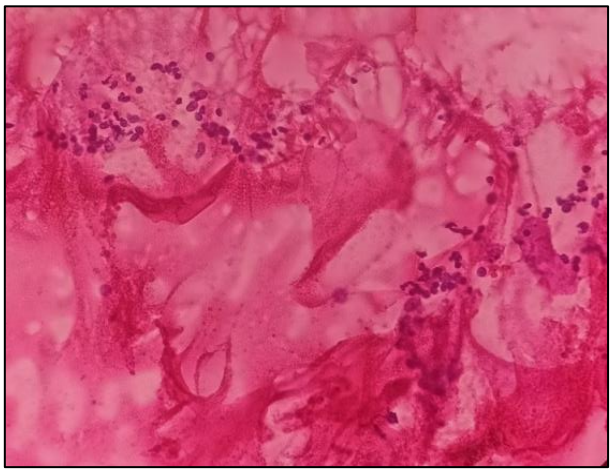

Figure 1: Colloidal cyst.

Regarding spectrum of lesion in lymph node, reactive changes was present in 16(8%) patients; tuberculosis was present in 42 (21%) patients. Regarding malignant lesion in lymph nodes, 16 (8%) patients have secondary and 4 (2%) patients having lymphoma. In the salivary gland, 4 (2%) patients have nonspecific finding, benign lesion was found in 11 (5.5%) patients and malignant lesion was present in 5 (2.5%) patients. In the soft tissue most of the specimen was nonspecific.

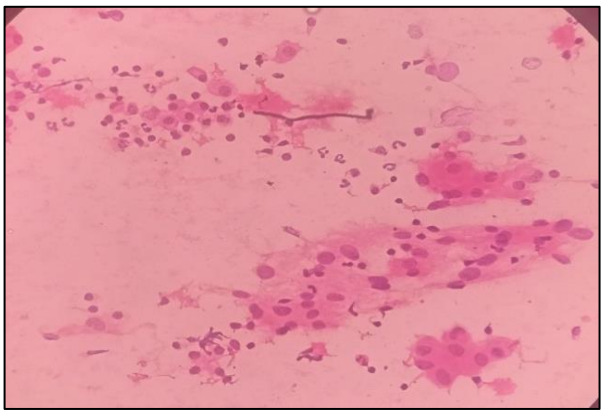

Figure 2: Thyroglossal cyst.

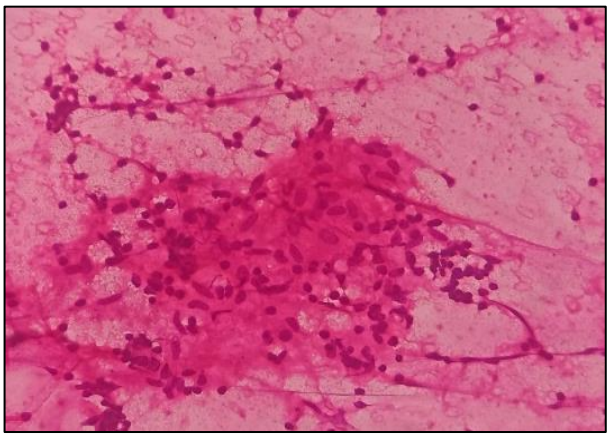

Figure 3: Cystic node with TB.

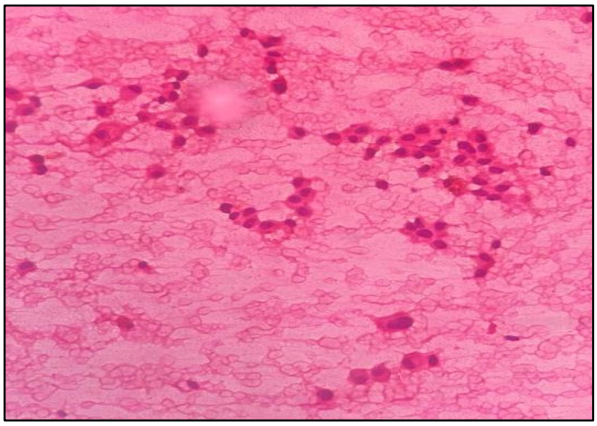

Figure 4: Mucoepidermoid carcinoma.

DISCUSSION

Present study has been conducted to assess the spectrum pathology in the neck presented as cystic swelling assessed by fine needle aspiration cytology. In present

study it was observed that mean age of the patients was 34.66±4.21 years and most of the patients were below 40 years of age and there was male predominance. Rathod et al has reported that Maximum incidences observed in the age group of 21-30 years and there was male predominance this finding supports our study.[1] Muddegowda et has reported that Cases from Salem included 35 males and 65 females. Patients were mostly in fourth and fifth decade predominantly this finding partially support our study.[11]

In present study lymph node was most common organ with cystic swelling (43%) and thyroid (40%) was next to it. Salivary gland was third most common organ involved (10%). Laxman et al from Nepal has reported that lymph node swellings were highest in frequency, accounting for 55.04% of all cases.[12] This finding is in accordance with our study. Apoorva et al, has reported that most of the cases aspirated were from lymph nodes 680 (53.46%), followed by 324 cases (25.47%) from thyroid gland, 74 cases (5.82%) from parotid region, 36 cases (2.83%) from submandibular region, and there were total 61 cases (4.8%) whose reports were inconclusive this finding corroborates with our study.[13] Sira et al has reported that 30.8% of the neck lesions believed to be branchial cysts in patients over 40 were malignant, in contrast to 5.3% of those lesions in patients under 40 years of age.[14] But in our study Colloidal goitre was present in 38 (19%) patients and tuberculosis was present in 42 (21%) patients. el Hag et al has reported that the most common diagnoses were reactive/nonspecific lymphadenitis and tuberculosis (TB) lymphadenitis (33% and 21%, respectively) this finding support our study.[15]

Shekhar et al has reported that reactive lymphadenitis was found to be the most common pathology in our study accounting for 16% of cases followed by granulomatous lesion (tuberculous) found in 15% and 14.5% of cases were malignant lesion this finding supports our study.[16] Ahmad et al has concluded that tuberculous lymphadenitis is still the commonest condition in patients presenting with neck swellings followed by non-specific lymphadenitis and malignant neoplasms especially metastatic carcinoma this finding corroborates with our study.[2] Akhavan-Moghadam et al has reported that Twenty-five (40.8%) subjects were categorized as malignant neoplasms, 16 (19.4%) as benign neoplasms, and 24 (39.8%) as non-neoplastic lesions this finding does not support our study.[17] Rajbhandari et al has repoted that the highest number of cases included lymph nodes 29 (45%) followed by thyroid 24 (37.5 %), salivary glands 10(16%) and 1 case (1.6%) was a soft tissue swelling over the occipital region this finding further support our study.[18]

Limitation of this study

Sample size was major limitation of our study, lager sample size could have more informative. Because of covid 19 pandemic we have to limit sample size.

CONCLUSION

From present study we can conclude that that mean age of the patients was 34.66±4.21 years and most of the patients were below 40 years of age and there was male predominance. In present study lymph node was most common organ with cystic swelling (43%) and thyroid (40%) was next to it. Salivary gland was third most common organ involved (10%). In our study Colloidal goitre was present in 38(19%) patients and tuberculosis was present in 42(21%) patients.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Rathod GB, Parmar P. Fine needle aspiration cytology of swellings of head and neck region. Indian J Med Sci. 2012;66(3-4):49-54.
2. Ahmad T, Naeem M, Ahmad S, Samad A, Nasir A. Fine needle aspiration cytology (FNAC) and neck swellings in the surgical outpatient. J Ayub Med Coll Abbottabad. 2008;20(3):30-2.
3. Mittal MK, Malik A, Sureka B, Thukral BB. Cystic masses of neck: A pictorial review. Indian J Radiol Imaging. 2012;22(4):334-43.
4. Sira J, Makura ZG. Differential diagnosis of cystic neck lesions. Ann Otol Rhinol Laryngol. 2011;120(6):409-13.
5. Bhattarai, Narendra, Kushwah, Akanksha. Fine needle aspiration cytology of cystic lesions of head and neck. Journal of Pathology of Nepal. 2018;8:1360.
6. Padia B., Dhokiya M. A study of FNAC of head and neck lesions at a tertiary care centre. Trop J Path Micro. 2018;4(8):592-6.
7. Goyal D. Study of Cystic Neck Swellings Over A Period of 5 Years. 2015;4(2):1-4.
8. Soussan I, Farahnaz Z, Shahram S. Prevalence of Pathological Entities in Neck Masses: A Study of 1208 Consecutive Cases. Avicenna Journal of Dental Research. 2016;8.
9. Abraham ZS, Mathias M, Mapondella KB, Kahinga AA, Ntunaguzi D, Massawe ER. Prevalence and Aetiology of Neck Masses among Patients Receiving Surgical Services at Muhimbili National Hospital, Tanzania. Medical Journal of Zambia. 2019;46(1):54-60.
10. Sample size for a prevalence survey, with finite population correction. Available at: http://sampsize.sourceforge.net/iface/. Accessed on 10 November 2021.
11. Muddegowda PH, Srinivasan S, Lingegowda JB, Kurpad RR, Murthy KS. Spectrum of cytology of neck lesions: comparative study from two centers. J Clin Diagn Res. 2014;8(3):44-5.

12. Banstola L, Sharma S, Gautam B. Fine needle Aspiration Cytology of various Head and Neck Swellings, Medical Journal of Pokhara Academy of Health Sciences (MJPAHS). 2018;1(2).
13. Pandey AK, Bhardwaj A, Maithani T, Kishore S, Singh VP. Distributive Analysis of Head and Neck Swellings with Their Cytopathological Correlation, Otorhinolaryngology Clinics: An International Journal. 2016;8(3):89-96.
14. Sira J, Makura ZG. Differential diagnosis of cystic neck lesions. Ann Otol Rhinol Laryngol. 2011;120(6):409-13.
15. el Hag IA, Chiedozi LC, al Reyees FA, Kollur SM. Fine needle aspiration cytology of head and neck masses. Seven years' experience in a secondary care hospital. Acta Cytol. 2003;47(3):387-92.
16. Shekhar H, Kaur A, Agrawal P, Pancharia A, Jadeja P. Fine needle aspiration cytology in head and neck swellings: a diagnostic and therapeutic procedure. Int J Res Med Sci. 2014;2:1667-71.
17. Akhavan-Moghadam J, Afaaghi M, Maleki AR, Saburi A. Fine needle aspiration: an atraumatic method to diagnose head and neck masses. Trauma Mon. 2013;18(3):117-21.
18. Rajbhandari M, Dhakal P, Shrestha S, Sharma S, Shrestha S, Pokharel M et al. The correlation between fine needle aspiration cytology and histopathology of head and neck lesions in Kathmandu University Hospital. Kathmandu Univ Med J (KUMJ). 2013;11(44):296-9.

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