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SUPERFICIAL CERVICAL SWELLING IN CHILDREN;
ROLE OF FNAC IN DIAGNOSIS - EXPERIENCE AT BAHAWALPUR

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ABSTRACT... Fine needle aspiration cytology (FNAC) is commonly used first line diagnostic test for palpable cervical swelling by ENT and Head & Neck surgeon. **Objective:** To analyze the diagnostic importance of FNAC by knowing its sensitivity and specificity in children having palpable cervical swelling. **Design:** Prospective study. **Setting:** Department of ENT and Head Neck Surgery QAMC, Bahawalpur. **Period:** July 2006 to June 2007. **Material And Methods:** 82 cases of superficial cervical swelling with ages between 5 and 12 years were selected. Most of them were of poor socioeconomic class. All underwent FNAC for diagnosis and results were analyzed after comparing with histopathology examinations. **Results:** Out of 432 total patients (of all ages) who attended the ENT department during the study period, only 82 were selected for the research which fulfilled the inclusion criteria. These were 5-12 years old, both sexes, 47 boys (57.3%) and 35 girls (42.75%). Sixty eight (83%) patients had benign diseases while 14 patients (17%) had malignant lesions. Out of the 68 benign lesion (44.11%) were reaction hyperplasia (non specific inflammation), followed by tuberculous lymphadenitis (38.23%), cystic masses (5.88%), benign tumours (4.4 %) and nodular goiter (7.35%). Out of 14 malignant lesions, 6 (42.85%) had Hodgkin's Lymphoma, 2 (14.28 %) had Non Hodgkin's Lymphoma, 3 (21.42%) patients had squamous cell carcinoma and 1 (7.14%) patient each of rhabdomyosarcoma, undifferentiated carcinoma and pleomorphic adenoma. In our study sensitivity and specificity of FNAC to diagnose the malignant lesion was 85.7% and 89.7% respectively. Accuracy of FNAC in our study was 89.0%. **Conclusion:** FNAC is highly helpful to diagnose the pathology of cervical swelling in children. It has high rate of sensitivity, specificity and accuracy to diagnose the malignancy in these lesions. Proper and specific sampling needs complete cooperation of the child and sedation may be necessary for this. Expertise is required for FNAC reporting.

Key words: FNAC, children, cervical swelling, diagnosis.

INTRODUCTION

Fine needle aspiration cytology (FNAC) is diagnostic method of obtaining a representative specimen from a swelling with the help of thin bore needle by applying suction and making a smear for cytopathological diagnosis.

FNAC has attained wide spread usage in the diagnosis of superficial swellings all over the body in 1847. Kun reported presence of the cells when an aspirate was examined under microscope. In 1930's the procedure got universal acceptance[1,2].

Zajick[3] emphasized the simplicity, safety, rapidity and diagnostic accuracy of technique.

FNAC is invaluable test to diagnose a Head and Neck mass. It is accurate, quick inexpensive and easy to perform, just as OPD procedure. Any obvious body swelling can be tested like thyroid, lymph node, salivary

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gland, cystic swellings (branchial cyst, thyroglossal cyst).

Although in literature, FNAC role in diagnosis of cervical swelling is discussed reasonably but most reports are of adults. In our research, we selected children aging 5-12 years.

MATERIALS AND METHODS

The children 5-12 years age of both sexes having superficial swellings attending the outpatients of ENT department BVH from July 2006 to June 2007 and then admitted in the ward for open biopsy were selected. Some of the patients were referred from the paediatrics outdoor of the same institution.

The children less than 5 years of age and more than 12 years age were excluded from the study.

The children 5-12 years who already had undergone open biopsy some where else were also excluded from the study. Also the children having bleeding or clotting abnormalities were not included.

FNAC was repeated for inadequate specimen. Repeat FNAC cases which were not conclusive, were also excluded from the study.

All the patients were admitted in the ENT ward, BVH Bahawalpur. A detailed history and thorough clinical examination was performed. Relevant investigations for the final diagnosis were completed.

Material required included one 10 ml disposable syringe, one 21 G needle, two glass slides and ethanol for fixation of the sample.

Air was expelled and needle attached to the syringe. The cervical swelling was stabilized with left hand and the needle was entered into the swelling with the right hand. Suction was applied and maintained while several radial passes were made. Then suction was released and needle withdrawn from the swelling. Needle was disconnected from the syringe and 10 ml of air was aspirated into the syringe. Needle was reconnected with the syringe and specimen was expelled on th slide and smeared with a second slide.

The same procedure was repeated on another slide. Fixation of sample was done by spraying the alcohol on it and the slides were air dried.

Reports of all patients under study were attached with the Performa already made and filled for this purpose. All the patients were admitted in ENT ward for open biopsy and histopathology reports of each patient was attached with this Performa.

Both reports (FNAC & Histopathology) were compared and conclusion of true positive, true negative, false positive and false negative was made.

Sensitivity of the FNAC to pick up the malignant lesion in cervical swelling was calculated. Specificity of FNAC for the malignant lesion in cervical swelling was also calculated. Lastly accuracy of the test for malignant lesion diagnosis in cervical swelling was calculated.

RESULTS

Out of 432 patients of neck swelling who attended the ENT OPD, BVH, Bahawalpur during the study period, only 82 (82/432 18.98%) were between age of 5-12 years (Table-I).

Table-I. Age wise distribution of patients with cervical swelling (N = 432)

Age of the Patient	No of cases	%
< 5 years	21	4.86%
5-12 years	82	18.98%
> 12 years	329	76.76%
Total	432	100.00%

Forty seven (57.3%) patients were boys and 35 (42.7%) were girls.

All the patients were admitted in the ward and excision biopsy for histopathological examination was done. The patients were followed up for 12-18 months.

Out of 82 patients, sixty eight 68/82 had benign lesions. Out of these reactive hyperplasia (Chronic non specific

inflammatory lesion) was the most common problem (44.11%). Second common problem was chronic granulomatous lesion (38.23%) and tuberculosis was final diagnosis in all these cases. It also indicates the commonest pathology in our country.

Four cases were of cystic in nature. Two were dermoid cyst, one was thyroglossal cyst and one was cystic hygroma. Three cases were diagnosed as benign tumors; lipoma two cases and fibroma one case. All five cases of goiterous swelling were diagnosed as multinodular goiters and all were girls. (Table-II)

Table-II. Distribution of benign lesions

Disease diagnosed	No. of cases	% age
Reactive Hyperplasia (Non-Specific Chronic Infection)	30	44.11%
Chronic Granulomatous Inflammation	26	38.23%
Cystic Masses	04	05.88%
Benign Tumours	03	04.41%
Nodular Goiters	05	07.35%
Total	68	100.00%

Out of 14 cases of malignant lesions, six (42.85 %) had Hodgkin's Lymphoma, two cases (14.3%) had Non Hodgkin's Lymphoma. Three cases were diagnosed as secondary squamous cell carcinoma. One case each was diagnosed as rhabdomyosarcoma, pleomorphic adenoma and undiffrentiated carcinoma. (Table-III).

Benign to malignant ratio was 4.85:1.

In our study, FNAC was false negative in four patients and false positive in three cases, showing the sensitivity and specificity of 85.7% and 89.7% respectively.

Overall FNAC was 89.0% accurate in the diagnosis of superficial cervical swelling.

Table-III. Distribution of malignant lesions (N = 14)

Disease diagnosed	No of cases	% age
Hodgkin's Lymphoma	6	42.86%
Non Hodgkin's Lymphoma	2	14.29%
Sq Cell carcinoma	3	21.43%
Rhabdomyosarcoma	1	7.14%
Undifferentiated Carcinoma	1	7.14%
Pleomorphic Adenoma	1	7.14%
Total	14	100%

DISCUSSION

Cervical lymphadenopathay is the commonest cause of cervical mass in both adults and children. Clinically, reactive hyperplasia and tuberculous cervical lymph node are two common causes in children but the diagnosis should be confirmed before treatment is started.

FNAC has the benefit that it is least invasive, rapid, inexpensive and accurate but it needs expertise. So, it is commonly used as diagnostic test. As the test is useful, it should be included in work up of cervical mass in children.

The purpose of our study was to check the accuracy and to compare it with open biopsy. The research was unique in the sense that it was limited to children of 5-12 years of age. Locally only one research on the same issue is reported, work done at Karachi in 2001.

Our study showed that about 24% of patients with cervical swelling were children less than 12 years age.

In 1984, Tayler and Nunney[4] found that about half of masses in children were benign in nature.

In 1989, Gohen et al[5] reported that 55% of masses neck in children are benign.

In contrast to the above studies our study showed about 83% of cervical swellings in children are benign lessions. It may be due to regional variation and predominance of

tuberculous cervical lymphadenitis in our country. Our research coincides with the work done at Karachi by Salman et al[6] in 2001 which reveals 85% masses neck are benign in children.

Most of the studies revealing sensitivity and specificity between 90 – 98%.

In our study sensitivity, specificity and accuracy of FNAC was 85.7%, 89.7% and 89.0 % which is less than other studies probably due to deficiency of expert cytologist in backward city like Bahawalpur.

Sousa, -J et al[7] concluded that FNAC is a reliable method of management in the salivary gland tumour. Our study also has a reasonable accuracy in the diagnosis of Salivary gland tumour so the results are almost same.

Shirley et al[8] concluded that rapid staining of the FNAC smear is a useful adjunct to the evaluation of aspirated material, improving adequacy rate and over all performance and so it saves time and cost of patient. In our study all the sample were rapidly stained and so we got good results.

Draper et al[9] proved that grading system of FNAC smear produces an overall accuracy rate of 73.3% with a predictive value for malignancy of 88.6% and a predictive value for benign conditions of 67.3%. Grade 5 prove completely reliable with a predictivity value for malignancy of 100%. In our study no grading system was applied.

Tilak et al[10] proved that sensitivity of FNAC in head and neck masses is 90.91% while specificity is 93.18%. He also commented that the method is simple safe and economical.

Ustun, -M et al[11]. Commented that cystic change in the metastatic lymph nodes can cause diagnostic error and so FNAC should be repeated if reported as suspicious hypocellular cystic aspiration when clinically there is a strong doubt of malignancy. In our study all the samples were repeated which did not correlate clinically.

Daskalopoulou et al[12]. Proved that FNAC has a sensitivity of 93.10% and positive predictivity value of 100% in establishing diagnosis of waldeyer ring lymphoma. In our study the accuracy is almost the same.

Wan -Den – Brakel et al[13]. Concluded that only ultrasound guided FNAC can offer additional cytological criteria which are more reliable. In our study ultrasound was not used as all the swelling were superficial and palpable.

In 2002 Ragesh et al concluded that majority of cervical swellings in children are inflammatory (54%) followed by congenital malformation (30%) and neoplastic mass (16%). Tuberculus lymphadenitis was the single most common cause (28%)[14]. The findings of our study are almost the same.

CONCLUSIONS

FNAC is equally helpful in children to diagnosed a case of cervical swelling but it needs the cooperation of the child for proper sampling. FNAC has the advantages that it is rapid cheap, non invasive and reasonably accurate but it needs expertise for reports. Use of ultrasound or CT guided FNAC can also be helpful to take the proper sample especially deeply located swelling. Rapid staining of the sample with special stains can increase the accuracy of FNAC and should be used in selected cases at all teaching hospitals.

Use of electron microscope can also be beneficial and facility should be provided at every teaching hospital of the country.

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