Clinico-Pathological Correlation Study of Cervical Lymph Node Masses

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One hundred and ten cases of cervical lymph node masses were subjected to clinical evaluation and aspiration cytology. Eighty six cases which subsequently underwent open biopsy were subjected to histopathological evaluation. Accuracy, specificity and sensitivity of clinical diagnosis were 86.1%, 93.6% and 91.1% respectively as compared to 88.3%, 97.6% and 93.6% respectively for aspiration cytology. Reliability coupled with other advantages makes aspiration cytology the first line investigation in evaluating cervical lymph node masses reserving open biopsy for certain specific indications. Based on the conclusions a protocol is being recommended for evaluation of cervical lymph node masses.

INTRODUCTION

Cervical lymphadenopathy, a common clinical problem, often presents a diagnostic dilemma to the surgeon. It is imperative to establish a definitive diagnosis as early in the course of evaluation as possible in order to institute a meaningful treatment. The various avenues available for this are clinical evaluation, aspiration biopsy and open biopsy. The study was carried out with the broad objective of assessing the relative diagnostic efficacy of each of these modalities and evolving a protocol for evaluation for arriving at an early diagnosis.

Although the first description of aspiration of lymph nodes was by Greig and Gray in 1904, of their attempt at finding the causative organism for Trypanosomiasis, the credit for elucidating the cytological basis of diagnostic aspiration of lymph nodes is attributed to Forkner. Kline et al (1)

reported aspiration biopsy of lymph nodes to be a reliable investigation for early detection of malignancy and emphasised its role in suspecting the likely site of an occult primary by studying the histological pattern. Engzel et al found a high incidence of metastatic carcinoma in cervical lymph nodes on aspiration biopsy with high correlation on histopathology.

MATERIALS AND METHODS

The study was carried out on one hundred and ten cases attending the Out-Patient services of the Department of Otorhinolaryngology of Armed Forces Medical College, Pune with cervical lymph node enlargement between April 1992 and December 1993 selected without sex or age bias. Those with an acute inflammatory lesion in the area of drainage of the node, however were not subjected to the study. A detailed history was taken followed by physical examination in all patients and a clinical diagnosis was arrived at. Subsequently all cases were subjected to an aspiration biopsy. The technique involved puncturing the mass with a 22/23 gauge needle attached to 10 cc syringe with full negative pressure, moving it in quick strokes in various directions till aspirate appeared in the hub of the needle when it was withdrawn after equalising the negative pressure. Smears made from the aspirate were air dried, stained by Romanowsky method using Leishman's and May-Grunwald-Giemsa's stain. A proportion of these cases which were subsequently subjected to open biopsy were followed up. The relative efficacy of clinical evaluation and aspiration biopsy to diagnose benign and malignant cervical lymph node masses was assessed by comparing the accuracy, specificity and sensitivity.

RESULTS

The maximum incidence of cervical lymphadenopathy of 37.3% was in the age group 41-60 years followed by 34.5% in the age group 1-20 years. Male to female ratio was 1.3:1.0. Anterior cervical lymph nodes constituted 65.5%, posterior cervical group 20.9%, submandibular 7.3%, submental 13.6%, pre-auricular 1.8% and post-auricular 0.9% (Table I). 69.1% of the nodes were less than 3 cms, 20.9% between 3 and 6 cms, the reminder being more than 6 cms. Firm nodes constituted 65.5%, hard 29.1%, cystic 3.6% and soft 1.8%, 60% of the nodes were mobile while 23.6% were fixed to the surrounding structures, 16.4% of the total were considered matted.

On clinical diagnosis 63 cases constituting 57.2% were found to be benign of which 37 were due to reactive lymphadenitis and 26 due to

benign nature. 37 of these were found to be due to reactive lymphadenitis and 26 due to tuberculosis. Of the 45 cases of malignancy which accounted for 40.9%, 19 were squamous cell carcinoma, 6 anaplastic, 3 adenocarcinoma, 10 Hodgkin's lymphoma and 7 non-Hodgkin's lymphoma. Two FNAB reports were inconclusive.

Correlation of clinical and histopathological diagnosis showed a definite positive correlation in 41 of 63 cases of benign lesions and 33 of 45 malignant lesions diagnosed clinically constituting 65.1% and 73.3% respectively. This made an overall accuracy of clinical diagnosis 88.3%. There were 4 false positive cases. Two of these diagnosed clinically as tuberculous were proved to be lymphoma on histopathological examination. Two cases with a clinical diagnosis of reactive lymphadenitis were found to be metastatic carcinoma and lymphoma respectively. Of the 4 false negative cases, 3 were diagnosed as metastatic carcinoma clinically but subsequent histopathological examination showed one as branchial cyst, one as Cat-scratch disease and the last as reactive lymphadenitis. This made the false positivity rate of 3.6% and false negativity rate of 3.6%. The overall accuracy, specificity, sensitivity and positive predictive value were 86.1%, 93.6%, 91.1% and 91.1% respectively.

Cyto-histological correlation showed a positive correlation of exact diagnosis in 43 of the 63 cases constituting 68.3% for benign lesions and 33 of 45 cases representing 73.3% for malignant lesions giving an overall accuracy of FNAB of 88.3%. There were 3 false positive cases, one was a small subcutaneous nodule appearing one month after completion of radiotherapy in a case of nasopharyngeal carcinoma which was diagnosed as a case of metastatic carcinoma on FNAB, but was finally proved to be reactive lymphadenitis. The second false negative was a 3 cm hard discrete node in upper neck in young adult which was clinically and cytologically diagnosed as metastatic lymphadenopathy, but

**Site incidence
Cervical lymphnode masses**

Table-I

tuberculous lymphadenitis. Malignancy accounted for 45 cases constituting 40.9%. Of these metastatic lymph nodes accounted for 28 cases and lymphoma 17. In two cases conclusive clinical diagnosis could not be given. Cytological diagnosis by fine needle aspiration biopsy (FNAB) showed 63 cases representing 57.3% to be of

histopathology proved it as a branchial cyst. The third was a cytologically diagnosed lymphoma which turned out to be reactive lymphadenitis on histopathology.

There were two false positive cases as well. One was a case of a small cervical node in a post-radiotherapy neck which was considered non-malignant on FNAB but histopathology showed it as squamous cell carcinoma deposits. The other was a 3 cm upper deep cervical node in an elderly adult which was reported as suspicious of malignancy on FNAB, but showed granulomatous changes suggestive Cat scratch disease on histopathological examination. The false positivity and false negativity rates were 1.8% and 2.7% respectively. The overall accuracy, specificity, sensitivity and positive predictive value were 88.3%, 97.6%, 93.6% and 91.1% respectively (Table II).

DISCUSSION

Incidence of false negative cases on FNAB in metastatic nodes is a matter of grave concern to the clinician. Frable and Frable (2) gave two

the needle. Alternatively they suggested that metastasis could have occurred during the interval between initial aspiration and the open biopsy. Serial biopsies in such FNAB negative but clinically positive nodes would give an early diagnosis if this explanation is valid.

The risk of false positive reports from lymph nodes must also be considered. If it is true that alien cells such as squamous epithelial cells are readily recognizable in aspirates from lymph nodes. But dermatologic inclusion cysts and especially in neck, congenital inclusion cysts are clinically mistaken for cervical lymph nodes. Aspirates from such lesions are known to contain squamous epithelium which is difficult, if not impossible to distinguish from metastasis of well differentiated squamous cell carcinoma. This could possibly explain the mistaken diagnosis of metastatic deposits on FNAB in a branchial cyst.

A comparison of various statistical parameters with other similar studies shows a favourable comparison of a results. The present series of 110 cases had an accuracy, specificity and sensitivity of 88.3%, 97.6% and 93.6% respectively in comparison to 96.2%, 100% and 93.5% in a series of 53 cases by Frable et al (3) and 94%, 97.8% and 92.3% in a series of 298 cases by Young et al (4).

The results of this study suggests that it would be

Table-II

explanations, one being that at the time of needling metastatic growth involved only a minor area of the node and was therefore missed by

Table-III

worthwhile to evaluate histologically all cervical lymph node masses irrespective of the clinical diagnosis. The choice of mode of first line histological evaluation rests on aspiration cytology which provides a reliable, quick and cheap way with low failure and complication rates. However in view of the small but insignificant number of false negative results it must be emphasised that strong clinical suspicion

of malignancy should override a negative cytology report and an open biopsy should confirm the diagnosis. Apart from this open biopsy should be reserved for certain specific situations like failed aspiration and in lymphoma. On the basis of these conclusions a protocol is being recommended for clinico-pathological evaluation of cervical lymph node masses (Table III).

References

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— Editor.