FINE NEEDLE ASPIRATION CYTOLOGY IN DIAGNOSIS OF NONTHYROIDAL NECK MASSES

G. Mahbod, F. Koasri and M. Alavi Tafreshi

Department of Pathology, Sina Hospital, School of Medicine, University of Medical Sciences, Tehran, Iran

Abstract: ***Fine needle aspiration (FNA) technique is a well known procedure in the diagnosis of various organ diseases. This study was conducted to evaluate the utility of FNA in the diagnosis of neck masses. Fine needle aspiration was performed upon 123 patients with palpable nonthyroidal lesions at neck during a five-year period. In ten cases, FNA findings were nondiagnostic. From the reminder 113 patients, histopathologic results of 55 patients were available . Histopathologic evaluation revealed that 71% of cases had benign Lesions, and 29% had malignant tumors . False negative and False positive rates were 1.8% and 5.4% respectively.***

The sensitivity and specificity of FNA in determining malignant lesions were 81.2% and 97.4% respectively.Predictive positive and negative values were 92.8% and 92.7% respectively. Sensitivity of FNA in determining malignancy in lymph nodes was 72% (12.5% false negative).Based on our study findings, and those of other studies , we recommend performing fine needle aspiration in those patients who present with neck masses.

It is worthwhile to mention that except those cases with negative results of lymph node origin, most FNA findings are reliable and in such cases, open surgical biopsy is unnecessary.

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Key words: ***Fine needle aspiration, neck mass***

INTRODUCTION

Martin & Ellis (1930) were the first who used fine needle aspiration (FNA) technique in diagnosis of various organs' lesions. Gradually this technique progressed and at the present time, it is one of the best methods in the diagnosis of some organ's masses , like breast and thyroid (1). Although there are several studies, confirming the reliability of FNA in the diagnosis of nonthyroidal neck mass lesions (2-6), some physicians do not rely on it totally (7-8). If the accuracy of FNA in diagnosis of nonthyroidal neck mass lesions is confirmed, most of the affected patients will get rid of undergoing a diagnostic surgical procedure.

Correspondence:
Department of Pathology, Sina Hospital, School of Medicine, Tehran University of Medical Sciences,Tehran, Iran.
Tel: 6701040-440

MATERIALS AND METHODS

The target population of this study was those patients with nonthyroidal neck masses, admitted to Sina and Baghiyatallah hospitals pathologic centers, between June 1995 and June 2000 .

FNA was done as the first approach for diagnosis of the patients' lesions , and the researchers applied the FNA with similar method (1). Adequate slides were prepared , half of them stained by Pap method and the other half by M.G.G (May Grunwald-Giemsa). All FNA slides in this study were observed by one of the researchers (pathologist), and the final cytologic diagnoses were established.

Patients with unsatisfactory specimens (14 cases), were tried again, and their new slides were processed for the second time with similar method.

From each patient , 4 to 38 slides were prepared, with an average of 11.4 slides.

Patients who had subsequently undergone surgical excision were specified , and their slides were reviewed histopathologically , and their final diagnosis were re-established.

Histopathologic findings were compared with cytological reports and discrepancies were specified, and then sensitivity , specificity , predictive values , and accuracy of FNA were calculated.

RESULTS

In a total of 123 FNA , the patients were between age of 6 months to 80 years , with an average of 38 years.

Sixty nine cases (55%) were male and 54 cases (45%) were female , with sex ratio of about 1.3/1.

Histopathologic results were available in 45% of cases, from these, 71% were benign and 29% were malignant .

Histopathologic findings were compared with cytologic reports , and 7.3% discrepancies were identified (Table 1). One false positive in a parotid

gland lesion, and three false negatives in lymph nodes were evident (Table 1)

Comparing the cytologic and histologic findings, the rates of true and false positive and true and false negatives are shown in table 2. From this table sensitivity, specificity, accuracy and predictive positive values are calculated and are shown in table 3.

At the first step , 11.4% of patients had unsatisfactory specimens and they underwent FNA for second time . Ultimately unsatisfactory results were limited to 8% of cases.

Table 1. Discrepancies between FNA and pathology

	FNA findings	Final pathologic diagnosis
A	**Mucoepidermoid carcinoma**	Pleomorphic adenoma
B	**Pleomorphic adenoma**	Metastatic adenocarcinoma
C	**Reactive lymphadenitis**	Non Hodgkin lymphoma
D	Inflammatory process	Metastatic carcinoma

Table 2. Compared FNA and pathologic findings

	Benign final pathologic diagnosis	Malignant final pathologic diagnosis	Total
Malignant in FNA	**F.P.=1**	**T.P. = 13**	14
Benign in FNA	**T.N.= 38**	**F.N. = 3**	41
Total	39	16	55

F.P. = False positive
F.N. = False negative
T.P.= True positive
T.N. = True negative

DISCUSSION

Reliability of FNA in diagnosis of nonthyroidal neck mass lesions are evaluated in several studies.

In table 3, the calculated sensitivity, specificity, accuracy and predictive value of our study were compared with those of 7 other important similar studies (1,9,14).

The calculated sensitivity rate in different studies is from 81% (10) to 92% (11).

Specificity varies from 86% (9) to 98.9% (13). The calculated accuracy is from 84% (9) to 94.3% (12).

Meanwhile , in our study , low false positive rate , results in high specificity and predictive positive value , which are comparable with the other studies and apparently acceptable for a diagnostic test. As a result of high false negatives in lesions of lymph nodes , sensitivity (81.2%) is less than optimal.

We analyzed the lymph node lesions separately. The calculated result of sensitivity of FNA in lymph node malignancies is conspiciously low , and negative results in lymph node background are unreliable , and therefore , open surgical biopsy is recommended. However both positive and negative results of FNA in other neck masses (except lymph nodes) are reliable , and in many such cases, diagnostic open surgical biopsy might be replaced by clinical follow up or therapeutic surgery .

Table 3. Findings of 7 similar studies.

authors	n	Spe. (%)	Sen. (%)	P.P.V. (%)	Acu. (%)
Our study	**55**	**97.4**	**81.2**	**92.8**	92.7
bardales et al[1]	**98**	**93**	**86**	**96**	88
AL-Khafaji et al[9]	**147**	**86**	**82**	**84**	84
Cheng et al[10]	**187**	**89**	**81**	**91**	85
Djupesland et al[11]	**205**	**91.2**	**92.5**	**94**	91.8
Oyafuso et al[12]	**81**	**97.9**	**90.6**	**96.7**	94.3
Gertner et al[13]	**110**	**99**	**81.1**	**98.9**	90
Shintain et al[14]	43	94.1	88.9	93.5	92.5

Spe = Specificity
Sen.= Sensitivity
P.P.V. = Predictive positive value
Acu.= Accuracy

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