Review Article
Diagnostic value of fine needle aspiration biopsy in non-thyroidal head and neck lesions: a retrospective study of 866 aspiration materials

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Abstract: Aim: We aimed to investigate the diagnostic value of fine needle aspiration biopsy (FNAB) and compared our FNAB results of non-thyroidal head and neck lesions with excisional biopsy results. Materials and methods: A total of 866 aspiration material taken from different parts of head and neck region out of thyroid were evaluated at Haydarpasa Numune Training and Research Hospital Pathology Laboratory, between January 2002 and May 2013 and 248 of which has histopathologic response were included in the study. Patients depending on origin of the masses were divided into three categories as; salivary gland, lymph nodes and soft tissue/cystic lesions. The sensitivity, specificity, diagnostic accuracy values of fine needle aspiration biopsies have been investigated for all the series and individually for each category. Findings: Diagnostic sensitivity, specificity, accuracy, positive predictive value and negative predictive values of non-thyroidal head and neck masses were respectively; For all of the series; 94.6%, 97.9%, 96.7%, 95.9%, 97.2%, Salivary gland: 88.9%, 100%, 98.8%, 100%, 98.7%, Lymph nodes: 94.7%, 89.3%, 92.9%, 94.7%, 89.2%, Soft tissue/cystic lesions: 100%, 100%, 100%, 100%, 100%. For all of the series; there were 4 false negative (FN) cases; and 3 false positive (FP) cases. Conclusion: FNAB in the diagnosis of head and neck masses; it is an easy, cheap and useful procedure.

Keywords: Fine needle aspiration biopsy, head mass, neck mass, sensitivity, specificity, accuracy

Introduction
The complex anatomical structure and also primary and metastatic tumors localized in this region take part in a wide range; diagnostic approach of head and neck lesions often leads to difficulties. The malignancy should be thought in all kinds of mass in the neck region in the differential diagnosis [1-3].

The head and neck masses of knowing in advance that it is benign or malignant; has great importance in the selection of treatment modalities and techniques. Although the story of the patient, examination and radiological findings are router they are not sufficient most of the time. Therefore; the need for a practical, quick, reliable and non-surgical requirement for histopathologic diagnosis has led to the emergence of fine needle aspiration biopsy (FNA) techniques [3].

Our aim is to investigate the diagnostic value of FNA’s statistically; to determine sensitivity, specificity, false positives, and false negative rates, the positive predictive and negative predictive values and to identify the reasons for non-compliance by reassessing the cases with cytopathological and histopathological diagnosis mismatches therefore to compare them with the literature.

Materials and methods
In our study, a total 866 FNA material of the lymph nodes, salivary glands and soft tissue/
cystic lesions localized to the head and neck region were analyzed retrospectively from computer records at Haydarpasa Numune Training and Research Hospital pathology department between January 2002-May 2013. Thyroid cases were not included in the study.

FNAB’s; accompanied by radiologists with ultrasonography (USG), palpable masses were done by pathologists and a less number of biopsies were made by clinicians. The preparations were fixed in alcohol which will be dyed by Papanicolaou (PAP) method, and others were allowed to air dry that will be painted with May-Grünwald-Giemsa (MGG). Also the block sections obtained from bleeding material remaining in the syringe cells were stained with hematoxylin and eosin (H&E).

Cytopathologic diagnosis were categorized in five groups as “inadequate”, “benign”, “atypical benign”, “atypical malignant” and “malignant”. The histopathologic diagnoses were compared with cytopathologically individually.

This comparison was reclassified again as; insufficient, benign or malignant in the diagnosis of FNA; and benign or malignant in the diagnosis of histopathology. For this classification; “atypical benign” category were accepted as benign in the cytopathologic diagnosis, “atypical malignant” in the malignant category. The histopathological diagnosis was performed as gold standard in statistical analysis.

Results

FNA materials were categorized in five groups as “benign”, “malignant” “atypical malignant” “atypical benign” and “inadequate”.

Cases without a histopathologic response

A total of 618 FNA materials; 107 of (17.3%) were insufficient and 417 of (67.4%) benign, 18 (2.9%) of atypical benign, 16 (2.6%) of atypical malignant, 60 (9.8%) of malignant. 318 (51.4%) of consisted from lymph nodes, 139 (22.5%) from salivary glands, 161 (26.1%) from soft tissue and cystic lesions. In the absence of histopathological diagnosis they were excluded from the study.

Cases with histopathological diagnosis

248 patients aged from 6 to 90 years and the average age was 51.39 ± 17.80. 53.6% (n = 133) of cases were male and 46.4% (n = 115) of female. Histopatopathologically; 170 were benign lesions, 78 were malignant. Distribution of benign cases are shown in Table 1 and malignant cases in Table 2. The most frequent benign lesion was pleomorphic adenoma and Warthin’s tumor, the most common malignant neoplasms were lymphoma and epithelial carcinoma metastasis.

False negative cases (shown in Table 3)

The first case was diagnosed pleomorphic adenoma in cytology and reported as adenoid cystic carcinoma in histopathological. The second case was diagnosed reactive hyperplasia in cytology and reported as grade 1 follicular lymphoma in histopathological. The third case was diagnosed reactive lymphoid hyperplasia in cytology and reported as mucoepidermoid carcinoma infiltration in two microscopic focuses in histopathological. The fourth case was diagnosed benign cysts content in cytology and reported as papillary thyroid carcinoma metastases showing cystic degeneration in histopathological.

In summary, 140 aspiration material cytopathologically called as “benign”; 4 (2.9%) of were malignant and 136 of (97.1%) benign histopathologically and also all three aspiration material called “atypical benign” was histopathologically benign.

False positive cases (shown in Table 3)

The first case was diagnosed poorly differentiated epithelial carcinoma metastasis (nasopharyngeal carcinoma) in cytology and reported as pilomatrixomas in histopathological examination. The second case was diagnosed malignant lymphoma in cytology and reported as reactive lymphoid hyperplasia, progressive transformation in histopathological. The third case was diagnosed “atypical lymphoid aspirate, is within the differential diagnosis of Hodgkin’s lymphoma” in cytology and reported as “reactive lymphoid hyperplasia, T zone hyperplasia in histopathological.

Cytologically 53 aspiration material was “malignant”; 51 of which malignant and 2 of benign in histopathological.

Discussion

FNAB is a reliable, cheap, widely used simple method to evaluate palpable, as well as non-palpable lesions that can be detected radiologi-
Diagnostic value of fine needle aspiration biopsy

Table 1. Distribution of benign cases

<table>
<thead>
<tr>
<th></th>
<th>Cytopathologic</th>
<th>Histopathological</th>
</tr>
</thead>
<tbody>
<tr>
<td>All series</td>
<td>140 (98%) benign</td>
<td>139 (97.2%) benign</td>
</tr>
<tr>
<td></td>
<td>3 (2%) atypical benign</td>
<td>4 (2.8%) malign</td>
</tr>
<tr>
<td>Lymph node</td>
<td>26 (100%) benign</td>
<td>23 (88.5%) benign</td>
</tr>
<tr>
<td></td>
<td>3 (11.5%) malign</td>
<td></td>
</tr>
<tr>
<td>Salivary glands</td>
<td>79 (100%) benign</td>
<td>78 (98.7%) benign</td>
</tr>
<tr>
<td></td>
<td>1 (1.3%) malign</td>
<td></td>
</tr>
<tr>
<td>Soft tissue/cystic lesions</td>
<td>35 (97.2%) benign</td>
<td>36 (100%) benign</td>
</tr>
<tr>
<td></td>
<td>1 (2.8%) atypical benign</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Distribution of malignant cases

<table>
<thead>
<tr>
<th></th>
<th>Cytopathologic</th>
<th>Histopathological</th>
</tr>
</thead>
<tbody>
<tr>
<td>All series</td>
<td>53 (72.5%) malign</td>
<td>3 (4.1%) benign</td>
</tr>
<tr>
<td></td>
<td>20 (27.5%) atypical malign</td>
<td>70 (95.9%) malign</td>
</tr>
<tr>
<td>Lymph nodes</td>
<td>39 (68.5%) malign</td>
<td>3 (5%) benign</td>
</tr>
<tr>
<td></td>
<td>18 (21.5%) atypical malign</td>
<td>54 (95%) malign</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>6 (75%) malign</td>
<td>8 (100%) malign</td>
</tr>
<tr>
<td></td>
<td>2 (25%) atypical malign</td>
<td></td>
</tr>
<tr>
<td>Soft tissue/cystic lesions</td>
<td>8 (100%) malign</td>
<td>8 (100%) malign</td>
</tr>
</tbody>
</table>

Table 3. Cytopathologically, false positive and false negative cases in all series and sub-categories; “benign” and “atypical benign” cases included into benign category, “malignant” and “atypical malignant” patients to malignant category

<table>
<thead>
<tr>
<th></th>
<th>Benign</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TN</td>
<td>FN</td>
</tr>
<tr>
<td>All series</td>
<td>139</td>
<td>4 (4+0)</td>
</tr>
<tr>
<td>Lymph nodes</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>78</td>
<td>1</td>
</tr>
<tr>
<td>Soft tissue/cystic lesions</td>
<td>36</td>
<td>-</td>
</tr>
</tbody>
</table>

**TN-true negative/FN-false negative/TP-true positive/FP-false positive.

When we examine the subgroup of patients with head and neck FNA

From 98 aspiration materials of salivary gland; 11 cases were insufficient cytopathologically and 9 (81.8%) of benign, 2 of were malignant (18.2%) in histopathological analysis. The histopathologic diagnosis of false negative case was adenoid cystic carcinoma. In our study, there is only one false negative case and none false positive case therefore our sensitivity, specificity and accuracy rates are higher than many other series.

Considering the most frequent lesions in the literature; Alam et al. [12] at 2009 in their study of non-thyroidal 128 cases, they have identified the most common lesion as pleomorphic adenoma in children and adolescents in the salivary gland category. El Hage et al. [8] at 2003, in non-thyroidal 225 cases they showed that

Unsatisfactory 32 patients were excluded from statistical analysis.

The literature shows a small number of series evaluating the head and neck lesions with FNAB assessing collectively. 6 of these 11 series results are from Turkey. For all these series sensitivity, specificity and diagnostic accuracy rates shown in the table (Table 5).

In our study, sensitivity, specificity and diagnostic accuracy rates were found higher than many studies in the literature (shown in Table 4). This situation was considered to be related to; being directly at the bedside of patients with primary inspection; taking clinical data before the performance of the procedure of FNA. Also in some studies thyroid lesions are included in the calculation but we exclude it.


the most common lesions were sialoadenitis, then pleomorphic adenoma, Warthin's tumor and mucoepidermoid carcinoma in salivary gland category. Similarly Demir et al. 4-year follow up of 2006 [3], in their study involving a total of non-thyroidal 165; the most common lesions in the salivary glands were pleomorphic adenoma; Warthin's tumor is mucoepidermoid carcinoma and sialoadenitis.

When we look at the literature, false-negative and false-positive cases

Again in the study of Demir et al. [3] in a total of 165 cases; two cases were diagnosed as adenoid cystic carcinoma in histopathology but pleomorphic adenoma in cytology. Nevertheless, the mucoepidermoid carcinoma cases diagnosed with cytology were found Warthin's tumor and benign neoplasm in histopathology.

Kim et al. [14] in their study at 2013 with 521 cases in salivary gland category they showed that incorrect diagnosis were most common in benign tumors and low-grade or intermediate-grade tumors; they also reported that in the diagnosis of high-grade salivary gland tumors false diagnosis was rare. In this series; 7 cases were malignant in cytology, but benign in histopathology, 34 cases were benign in cytology but malignant in histopathology. The sensitivity was found 64.2%, specificity 98.4%, accuracy 92.1% in benign tumors, while sensitivity 94.6%, specificity 99.2%, accuracy was 98.9% in high-grade malignant tumors.

Jain et al. [15] at 2013 in their study in 80 cases of salivary gland; false negatives as oncocytoma diagnosed cases in cytology were acinic cell carcinoma histopathology. A case of squamous differentiation can not be selected, interpreted as adenocarcinoma but it has been determined that the specimens resected squamous cell carcinoma of the provision in histopathology. 4 cases of benign cytology reviewed the presence of hyaline globules and characteristic stroma chondromyxoid absence on spreading caused lesions interpreted as adenoid cystic carcinoma. However, the diagnosis was pleomorphic adenoma in these cases.

Daneshbod et al. [16] evaluated a series of 1040 cases in 2009; they showed false positive 10 cases, and false negative 13 cases. In this series, the most frequent cases of false negatives were interpreted as acinic cell

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Accuracy</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>All series</td>
<td>94.6%</td>
<td>97.9%</td>
<td>96.7%</td>
<td>95.9%</td>
<td>97.2%</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>88.9%</td>
<td>100%</td>
<td>98.8%</td>
<td>100%</td>
<td>98.7%</td>
</tr>
<tr>
<td>Lymph nodes</td>
<td>94.7%</td>
<td>89.3%</td>
<td>92.9%</td>
<td>94.7%</td>
<td>89.2%</td>
</tr>
<tr>
<td>Soft tissue/cystic lesions</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 4. Sensitivity, specificity, accuracy, the positive predictive and negative predictive values**

**PPV-positive predictive value/NPV-negative predictive value.

<table>
<thead>
<tr>
<th>Year</th>
<th>Case number</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Accuracy</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schelkun et al. [1]</td>
<td>1991</td>
<td>81.1%</td>
<td>99%</td>
<td>90%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aydoğdu et al. [7]</td>
<td>1995</td>
<td>91.66%</td>
<td>90.3%</td>
<td>90.9%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fulciniti et al. [4]</td>
<td>1997</td>
<td>96.2%</td>
<td>100%</td>
<td>93.5%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ersöz et al. [2]</td>
<td>1998</td>
<td>78%</td>
<td>94%</td>
<td>89%</td>
<td>89</td>
<td>88</td>
</tr>
<tr>
<td>El Hag et al. [8]</td>
<td>2003</td>
<td>95%</td>
<td>92%</td>
<td>95%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Köybaşoğlu et al. [9]</td>
<td>2004</td>
<td>93.4%</td>
<td>81.8%</td>
<td>88.8%</td>
<td>87.7</td>
<td>-</td>
</tr>
<tr>
<td>Demir et al. [3]</td>
<td>2006</td>
<td>80.64%</td>
<td>100%</td>
<td>96.34%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Yilmaz et al. [10]</td>
<td>2008</td>
<td>84.2%</td>
<td>85.1%</td>
<td>71.9%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Karaman et al. [11]</td>
<td>2009</td>
<td>81.98%</td>
<td>100%</td>
<td>81.98</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alam et al. [12]</td>
<td>2009</td>
<td>93.3</td>
<td>94</td>
<td>95.65</td>
<td>96</td>
<td>92</td>
</tr>
<tr>
<td>Addams-Williams et al. [13]</td>
<td>2009</td>
<td>93%</td>
<td>94%</td>
<td>95.65</td>
<td>96</td>
<td>92</td>
</tr>
<tr>
<td>Our study</td>
<td>2013</td>
<td>94.6%</td>
<td>97.9%</td>
<td>96.7%</td>
<td>95.9</td>
<td>97.2</td>
</tr>
</tbody>
</table>

**Table 5. The sensitivity, specificity and diagnostic accuracy rates of different studies**

Diagnostic value of fine needle aspiration biopsy

carcinoma, due to acinar cells with calcified material; these cases have been reported as sialolithiasis. Again, a case of mixed tumor has been reported as adenoid cystic carcinoma similar to our study [17].

Similarly, our false-negative case had been diagnosed with pleomorphic adenoma in cytology, cribriform, and tubular variant of adenoid cystic carcinoma in histopathology.

FNAB is important in the determination of preoperative procedure (partial or total parotidectomy, facial nerve resection or radical neck dissection). The surgical procedure is determined by the result of FNAB. Positive and negative predictive value of this method in recent studies shows that it is over 80 to 90% [5]. Therefore FNAB for patient management in salivary glands masses are useful. To minimize sampling errors prevents errors in comments.

From 248 aspiration material, 94 (37.9%) consisted of lymph node lesions. A total of 94 lymph node material, 9 (9.6%) were insufficient, 28 (29.8) of benign and 57 (60.6%) were diagnosed as malignant. In this category, specificity and diagnostic accuracy values were; 94.7%, 89.3%, 92.9% respectively, and PPV was 94.7%, NPV was 89.2%.

At the 4-year follow study of Demir et al. [3] in 2006, involving non-thyroidal lymph nodes of 165 cases, specificity and diagnostic accuracy values were 88.8%, 100%, 94.1% respectively; in the study of Köybaşoğlu et al. [9] of 369 cases including thyroid lesions, values were 89.6%, 60%, 85.2%; in the study of Yılmaz et al. of 2008 [10] 9-year study of 352 cases including thyroid lesions, values were 73.3%, 81.8%, 67%. El Hage et al. [8] of 2003, in the evaluation of 225 non-thyroidal cases, 73% of the cases were lymph node aspiration.

Benign lesions are most often reactive lymph nodes, then granulomatous lymphadenitis, malignant lesions most frequently metastatic carcinomas and lymphoma cases. These series also reported the sensitivity and specificity for the tuberculosis lymphadenitis cases as (98% and 97% respectively). Rathod et al. [18] for the year 2012 of 200 cases including head and neck lesions with thyroid lesions too; lymph node aspiration rate was 28.50%. Again in the study of Demir et al. [8] of 2006, involving a total of non-thyroidal 165 cases, 34 cases were lymph node studies, of which 16 benign and 18 were found to be malignant.

Ahmad et al. [19] in their study involving 50 cases; the majority of benign lesions were granulomatous inflammation and reactive/non-specific lymphadenitis. Lymph node aspiration was 37.9% of our total cases. The distribution of patients was similar to other studies; the majority of patients were granulomatous lymphadenitis.

In the literature; in the series of Alam et al. [12] two false positive cases are reported. In both cases, patients were diagnosed incorrectly with lymphoma, and then evaluated as reactive lymphoid hyperplasia. In the study of El Hage et al. [8] they have made a similar error; they could not give the diagnosis of Hodgkin's lymphoma in cytology. In the study of Demir et al. [3] there were 2 cases with false negative diagnosis, one of lymphoma the other was metastatic carcinoma.

In our study, when we examine three cases of false negatives

In the first case, in cytology; mature and transformed lymphocytes, together with rare tingible body macrophages, rare salivary gland acinar structures was considered to be compatible with reactive lymphoid hyperplasia. However, we add as a footnote “a persistent lymph node excision would be appropriate” and excisional biopsy was performed. Follicular pattern forming a monotonous infiltration was seen in the histopathology of this case. Combined with immunohistochemical findings diagnosis has been reported as “grade I follicular lymphoma”.

The second case has been operated as salivary gland tumor in the outer center; she was admitted to our clinic with lymphadenopathy that exists in that region. After FNAB, reactive lymphoid hyperplasia was seen in cytology; with lymph node excision mucoepidermoid carcinoma infiltration was detected in two small microscopic focuses of perinodal areas. In this case, the tumor had no opportunity to FNAB sampling because it is too small, this phenomenon has been recognized as the sampling.

In the third case; except acidophilic material and plenty of histiocytes, no cellular compo-
Diagnostic value of fine needle aspiration biopsy

Components of the solid lesions were seen in cytology samples. However, the histopathology has been reported as papillary carcinoma metastases with cystic degeneration. FNAB could not sample the solid portion of lesion that was regarded as sampling error.

Cytopathologic called malignant there was 57 (5.3%) cases from 94 lymph node aspiration material; but 3 of the aspirate benign and 54 (94.7%) were malignant. There are three cases of false positives. One of these cases was pilomatrixoma and the others were reactive lymphoid hyperplasia.

*When we look back to the series in terms of false-positive cases*

El Hage et al. [8]’s series, a case was Hodgkin’s lymphoma in cytology but found granulomatous lymphadenitis in histopathologic response. In the study of Köybaşıoğlu et al. [9] one of the two cases reported as false positives. Reed-Steinberg cells were seen incorrectly due to the presence of epithelioid macrophages and multinucleated histiocytes. The diagnoses of these two cases were granulomatous lymphadenitis. In the study of Demir et al. [3] a false positive case was metastatic carcinoma in cytology but reactive lymphadenopathy in the histopathological. Similarly Ersöz et al. [2] made error in a case; in fact, a patient with lymphoid hyperplasia was diagnosed with non-Hodgkin’s lymphoma.

In our study, there are three cases of false positives. Looking at the detailed investigation of these case. First case: Cytological evaluation was reported as “atypical lymphoid aspirates, Hodgkin’s lymphoma is within the differential diagnosis”. In lymph node excision hyperplasia of the T zone was dominant. Interfollicular Hodgkin’s lymphoma was thought in the differential diagnosis, but available histopathological findings did not support this diagnosis. Large immunoblastic cells origin from T zone is mistakenly been interpreted as Hodgkin’s cells.

Second case: Interpreted as malignant lymphoma in cytology, “reactive lymphoid hyperplasia, progressive transformation” in histopathology. Due to prolonged antigenic stimulation, follicular and paracortical lymphoid hyperplasia comes out and transformed and most of the cells in the blastic appearance from this region is to be interpreted as malignant lymphoma cells.

Third case: Reported in cytological as “poorly differentiated epithelial carcinoma metastasis, especially nasopharyngeal carcinoma is within the differential diagnosis”. This case was pilomatrixoma in histopathology. There was mature lymphocytes, necrotic material in places, groups together form a three-dimensional hyperchromatic nuclei and larger nucleoli of cells and PANCK positive immunocytocchemistry so nasopharyngeal carcinoma metastasis was thought.

The main reason for the error here is the lack of information on clinical examination. This case was presented as cervical masses-lymphadenopathy by clinical. In reality, the masses were under the skin mobile, superficial and not related with lymphadenopathy.

In cases with cervical lymphadenopathy the FNAB is the first step in evaluation. FNAB accepted by surgeons and oncologists as a diagnostic test in the evaluation of cervical adenopathies. In undiagnosed cases or suspected cases of lymphoma excision will be made. Especially in patients with known primary diagnosis is a very sensitive method for the evaluation of metastatic lymph nodes [20, 21].

Overall cytological examination will be enough in the definitive diagnosis of metastatic tumors and lymphoid hyperplasia. Most high-grade lymphomas can be easily identified. However, diagnostic difficulties may occur in some low-grade lymphomas, showing different patterns (progressive transformation etc.) in reactive lymph nodes or in malignancies showing partial involvement. Therefore FNAB of lymph node used to select patients who need tissue diagnosis and detailed immunological investigation. As a result, public opinion of authors is that FNAB is a safety method with the clinical management and laboratory findings of the patients with lymphadenopathy.

In our series, 56 of 248 aspiration material composed of soft tissue/cystic lesions. A total of 56 material 12 (21.4%) was insufficient, 36 (64.3%) benign and 8 (14.3%) were diagnosed as malignant. In the literature, the failure rate for this group in the study of Aydogdu et al. [7] is 25%. In the series of Köybaşıoğlu et al. [9]
Diagnostic value of fine needle aspiration biopsy

there were very small number of (total of 11) soft tissue lesions. 3 of these cases are benign, 7 malignant and 1 was reported to be inadequate. Histopathological correlation results were determined as 100% sensitivity 50% specificity and 70% accuracy. Karaman et al. [11] found that, the diagnostic sensitivity of FNAB was 83.3%, specificity 100% and accuracy as 83.3%. The diagnosis of benign cystic lesion was confirmed histopathologically. However, no malignant cases were in this group so it can not be speculated in the separation of malignancy. Similarly, Demir et al. [3] no malignant lesion in their series. All of the lesions are benign/cystic lesions. And in this case, the sensitivity, specificity and diagnostic accuracy rate of them are 100%. In the series of El Hag et al. [8] 11% of 225 patients were cystic lesions. The most common of these were thyroglossal duct cyst, branchial cleft cyst, cystic hygroma, epidermoid and dermoid cysts. The study team did not distinguish soft tissue lesions only showed as benign and malignant cases. In this category, the most common lipoma, hemangiomia and pilomatrixoma have been identified. Authors say that cystic lesions are the most common lesions after lymph node lesions in head and neck region therefore the separation of metastatic carcinoma and the cystic lesions are so important. There should be noted, inadequate or hypocellular aspiration material can lead to false negative cytology results [11, 22]. Indeed; Sheahan et al. [23] in their series of cystic lesions 25% false-negative results were detected. Therefore, when there are insufficient or unstable aspiration results it must be repeated and especially aspiration of the cyst wall material should be taken to reduce the false-negative cases. One issue to keep in mind is that of cystic metastatic lesions can mimic congenital or benign cystic lesions. In the series of Sheahan et al. [24] 10-24% of branchial cyst cases were cystic metastatic carcinoma, this is a good example for this situation.

Therefore, especially in elderly patients with cystic lesions; the upper aerodigestive system must be examined within FNAB; biopsies must be repeated from suspected areas. Again, another note is that after FNAB in infected cysts, due to inflammation and regeneration, cytologic atypia can lead to evaluation of lesions as false-positive [25].

In conclusion, with high rates of sensitivity, specificity, accuracy and the rare complications, FNAB is practical and easy to deal with; FNAB can be accepted as a method that may be preferred in the diagnosis of neck masses. Besides distinguishing whether the lesion is malignant with fine-needle aspiration biopsy, there is the possibility for specific diagnosis. However the negative results of FNAB should not be always considered as conclusive. The clinical findings and consideration of other diagnostic tests, clinicians and cytologist’s full compliance in the study, the experience of interventional radiologists in aspiration and smear preparation will allow the reduction of false results in FNAB.

Disclosure of conflict of interest

None.

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References

Diagnostic value of fine needle aspiration biopsy


