Radiol Oncol 1996; 30: 5–8.

Ultrasonically guided fine-needle aspiration biopsy in early detection of regional lymph-node involvement in patients with primary planocellular (squamous-cell) carcinoma of oral cavity

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The authors present personal experience in fine-needle aspiration biopsy under ultrasonic guidance (USGFNAB) of neck lymph-nodes in 63 patients with primary planocellular (squamous) carcinoma of oral cavity. Punctured, single, ipsilateral lymph-nodes were not larger than 3 cm of diameter (N1), while the indication for USGFNAB was established on the basis of at least one of the following ultrasonographic parameters:

1. disruption of capsular continuity of lymph-nodes,
2. the longest diameter above 20 mm,
3. the relation of short axis to long axis (of lymph-node) higher than 0.6,
4. the absence of intranodal linear echogenic structures.

Sensitivity rate of USGFNAB was as high as 88.2 %, specificity 91.7 %, accuracy 88.9 %, respectively. The authors stress the value of ultrasonographic image in conjunction with such harmless and simple method in the detection of occult neck metastases.

Key words: mouth neoplasms; carcinoma, squamous cele; lymph node-ultrasonography; biopsy, needle

Introduction

The assessment of neck lymph-nodes is an integral part of diagnostic procedure in patients with carcinoma of oral cavity, because eventual metastatic deposits thoroughly change therapeutic management and present significant predictive element. Modern diagnostics of neck metastases include palpation, conventional colo-Doppler[1] and interventional sonography, computed tomography (CT) and magnetic resonance (MR).[2,3] Recent comparative studies clearly show that ultrasonically guided, fine-needle aspiration biopsy (USGFNAB) is the method of choice in detecting metastatic masses in neck lymph-nodes.[4,5]

The purpose of the presented study is the evaluation of this method in diagnosis of metastasis in a single, ipsilateral lymph node, 3 cm or less in greatest dimension (N1) in patients

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UDC: 616.31-006.6:616-428-033.2-076

with planocellular (squamous-cell) carcinoma of oral cavity.

Subjects and methods

In the period from 1. april to 1. october 1993 (18 months) USGFNAB was performed on ultrasonographically suspect neck lymph-nodes in 63 patients with pathohistologically verified planocellular (squamous-cell) carcinoma of oral cavity. The age- range was between 29 to 75 years (average 59 years) with male to female ratio 47:16 (75% : 25%) in favor of male patients. The indication for USGFNAB was based on at least one of the following sonographic parameters:[6,7]

1. hypoechogenic disruption of capsular continuity of lymph-nodes,
2. the longest diameter above 20 mm,
3. the relation of short axis to long axis (of lymph-node) higher than 0.6 (SA/LA > 0.6) and
4. the absence of intranodal linear echogenic structures (stria).

With fine-needle (22 gauge) lymph-nodes from 0.6 to 3.0 cm of size were punctured and each lymph-node was punctured only once. The patients with more than one positive node, as well as those with nodes larger than 3 cm were excluded from the study. The instrument used was Aloka SSD-280 LS and linear sonde 5 MHz.

Cytologic material, stained according to standard technique (May-Grunvald-Giemsa), was analyzed under small and middle enlargement, and under immersed objective.

The cases with positive cytologic findings underwent surgical and oncologic treatment, while those with negative results are regularly controlled clinically and sonographically.

Results

On Table 1 results of USGFNAB and pathohystologic findings in lymph-nodes are presented. USGFNAB revealed metastatic masses in neck lymph-nodes in 46 cases, with one false-positive result. False-negative findings were present in 6 from 17 patients who underwent regular cytologic examination.

The percent of USGFNAB sensitivity on the presented material was 88.2%, specificity 91.7%, accuracy 88.9%, positive predictive value 97.8% and negative predictive value 64.7%, respectively.

In 16 cases (25.4%) with positive cytologic and pathohistologic findings, occult, impalpable metastases of neck were diagnosed. The precised indication for USGFNAB based on conventional sonographic image was exact in 51 (81%) cases. There were no complications in any case, except, slight, transitory pain.

Table 1. Ultrasonically guided, fine-needle aspiration biopsy (USGFNAB) of neck lymph-nodes.

	Histology or Clinical/Ultrasonography Course	
USGFNAB	Malignant	Normal
Malignant	45	1
Normal	6	11
Total	51 (81%)	12 (19%)

Discussion

The determination of metastatic deposits in neck lymph-nodes in patients with planocellular (squamous-cell) carcinoma of oral cavity and their early detection is crucial for selection of correct subsequent therapy. Conventional highly-resolute ultrasonography of the neck has high sensitivity, but is not specific enough,[2] so that recent studies recommend additional cytologic aspiration.[8,9]

The results of USGFNAB of neck lymph-nodes are presented. Punctured, single ipsilateral nodes were not larger than 3 cm in diameter (Figures 1, 2), while the indication for aspiration biopsy was based on conventional sonographic examination and following at least one of aforementioned parameters:

1. hypoechogenic disruption of capsular continuity of lymph nodes,
2. the longest diameter above 20 mm,
3. the relation between short to long axis (of

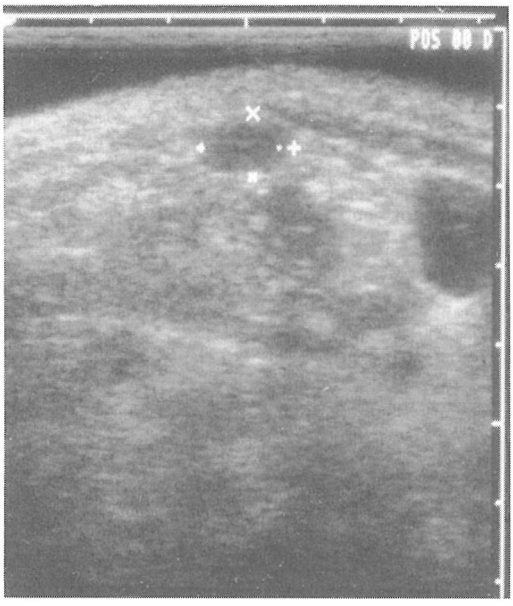

Figure 1. Unpalpable, cytologically and pathohistologically verified lymph-node metastases (dimensions 1.2 × 0.9 cm; short axis versus long axis = 0.75).

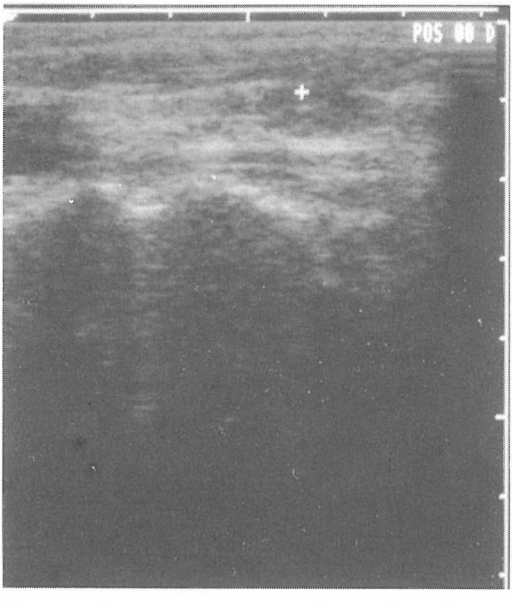

Figure 2. Ultrasonically guided fine-needle aspiration biopsy of unpalpable lymph-node metastases. Exactly under the cross hyperechogenic needle-tip is visible.

lymph-nodes) higher than 0.6 (SA/LA > 0.6) and

4. the absence of intranodal linear echogenic structures (stria).

After pathohistologic verification, i.e. regular clinical and ultrasonographic follow-up, we were able to discover metastatic deposits in 51 (81%) patients, which signifies that correct indication for USGFNAB occurred after conventional ultrasonographic examination in 4/5 of patients. In 16 cases (25.4%) occult metastatic deposits were found, i.e. lin 31.4% from 51 patients, regional N1 metastases were not palpable.

USGFNAB had positive predictive value 97.8% and negative predictive value 64.7%. By correlating sensitivity and specificity of this method with recent studies of Siegert et al.[9] (sensitivity 90%) and Baatenburg De Jung and Westerhof[8] (specificity 92.9%) we can notice somewhat lower sensitivity and specificity rate. Such slight difference (88.2% vs 90%; 91.7% vs 92.9%: p = NS) could be explained with the fact that we didn't treat cases with lymph-node metastases larger than 3 cm, that our testing-group was much smaller, and also with the grade of experience of specialist in cytology.

Conclusion

Ultrasonically guided, fine-needle aspiration biopsy is the method of choice in neck-staging of patients with planocellular (squamous-cell) carcinoma of oral cavity. Sensitivity, specificity and accuracy rate of this method is significantly greater than palpation, conventional ultrasonography, CT or MR[2,3,8] and that independently of the size of metastatic masses in neck lymph-nodes.[10] Moreover, this technique puts little stress on the patient, anesthesia is not required and lastly the cost is relevantly lower than CT or MR.[9] Summing personal experience and data from recent literature, we suggest that all patients with planocellular (squamous-cell) of oral cavity should undergo conventional ultrasonographic examination of the neck, and that each suspect sonographic finding should be complemented with USGFNAB. Presented positive and negative predictive value advocate further clinical and ultrasonographical follow-up, also in patients with regular findings.

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