

Fine Needle Aspiration Cytology of Thyroid Nodules: Correlation with Surgical Histopathology

Tiroid Nodüllerinde İnce İğne Aspirasyon Sitolojisi: Cerrahi Histopatoloji ile Korelasyon

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Abstract

Objective: Approximately 7% of people have thyroid nodules. The most important consideration in evaluating patients with thyroid nodules is whether the nodule is malignant. Fine needle aspiration (FNA) biopsy is the best, safest, and most cost-effective measure for distinguishing malignancy, thus preventing unnecessary surgeries. In this survey, adequacy of smears, cytologic findings, histologic findings, and their concordance, have been studied.

Materials and Methods: FNA biopsy was performed in 200 patients with palpable thyroid nodules in 2004-2005. Cytologic findings and adequacy of specimens were recorded. Of the 200 patients, 39 had surgery; postoperative histological results were compared with FNA biopsy results.

Results: Of FNA smears, 88% were adequate; of these adequate smears, 57.2% were benign, 34.2% were suspicious for malignancy, and 8.6% were reported as malignant. When results of surgical pathology were compared with FNA cytology results, all benign surgical specimens also had benign cytology results, and all malignant surgical specimens had malignant results on cytology evaluation. In nodules with suspicious cytology, histopathology showed that 50% were malignant and 50% were benign.

Conclusions: FNA is a simple and cost-effective procedure for identifying benign and malignant nodules. The incidence of malignant pathology in nodules with suspicious cytology was higher than other studies. *Turk Jem 2008; 12: 73-4*

Key words: Thyroid nodule, Fine needle aspiration, nodules cytology and nodules pathology

Özet

Amaç: Tiroid nodüllerine %7 sıklıkta rastlanmaktadır. Tiroid nodülü mevcut hastaların değerlendirilmesinde en önemli nokta, nodülün habis olup olmadığının belirlenmesidir. İnce iğne aspirasyon biyopsisi, selim-habis ayrımında, en iyi, en güvenli ve maliyeti elde edilen sonuçlara değer yöntemidir. Gereksiz cerrahi girişimleri engelleyebilir. Bu çalışmada, yayma preparatların yeterliliği, sitolojik bulgular, histolojik bulgular ve bunlar arasındaki tanı uyumluluğu çalışılmıştır.

Gereç ve Yöntemler: Palpabl tiroid nodülü olan 200 hastada ince iğne aspirasyon biyopsisi uygulanmıştır. Örneklerin yeterliliği, sitolojik bulgular kaydedilmiştir. Cerrahi girişim 39 hastada uygulanmıştır. Bu hastalarda, cerrahi girişim sonrası histopatolojik bulgular ve ince iğne aspirasyon biyopsisi sonuçları karşılaştırılmıştır.

Bulgular: İnce iğne aspirasyon biyopsisi yaymalarında yeterli örnek elde etme oranı %88'dir. Yeterli örneklerin %57.2'si selim, %34.2'si kuşkulu ve %8.6'si habis sitolojiye işaret etmektedir. Cerrahi sonrası, selim patolojisi olanlarda, sitoloji de selim bulgulara işaret etmektedir. Habis patolojisi olanlarda ise, sitoloji habis bulgulara işaret etmektedir. Kuşkulu sitolojisi olan nodüllerde, patolojik olarak malignite oranı %50'dir.

Sonuç: İnce iğne aspirasyonu, selim-habis tiroid nodülü ayrımında basit ve ucuz bir yöntemdir. Kuşkulu sitolojiye sahip nodüllerde habaset oranı, diğer çalışmalara göre daha yüksek bulunmuştur. *Turk Jem 2008; 12: 73-4*

Anahtar kelimeler: Tiroid nodülleri, ince iğne aspirasyonu, nodül sitolojisi, nodül patolojisi

Introduction

Thyroid nodule is common clinical problem. According to North American epidemiologic studies, the incidence of palpable nodules varies between 4% and 7% (1); their importance is defined

by hypothyroidism, hyperthyroidism, cosmetic problems, pressure effect on other organs, and the probability of malignancy (2). Only 1 of 29 clinically identified nodules is malignant (3). This corresponds to approximately 2 to 4 per 100,000 people per year, constituting only 1% of all cancers and 0.5% of all cancer deaths (4).

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These palpable nodules were found in 0.8% of men and 5.3% of women. They increase in frequency with age and with decreasing iodine intake, and are found 2-5 times more frequently in areas in which goiter is endemic (5).

Among diagnostic methods, fine needle aspiration (FNA) offers the advantages of simplicity, safety, and cost-effectiveness. Prior to FNA biopsies, almost 50% of these patients were operated, with malignancy found in 0.5% to 25%; use of FNA has reduced the need for operation to 20%, with malignancy found in 50% (6). Studies report the sensitivity of FNA as 65% to 90% (average 83%); depending on the experience of endocrinologist and cytopathologist, with a specificity of 72% to 100% (average 92%) (7,8).

This aim of this research was to compare FNA cytology results with the histopathology of nodules that were surgically removed to assess the accuracy of FNA in assessing thyroid nodules.

Materials and Methods

FNA was been performed on 200 patients with thyroid nodules during 2004-2005 in the endocrinology department of Hamadan University of Medical Science, Iran. An endocrinologist performed all samplings, and the cytologic smears were interpreted by a single cytopathologist.

Surgery was indicated for patients with cytologic results that appeared malignant or suspicious for malignancy; surgery was also performed for some benign nodules to relieve compression or discomfort or for cosmetic reasons. The histologic smears of surgical specimens were evaluated by the same cytopathologist who was blinded to the results of the FNA findings. Results of smears were recorded in a checklist and analyzed using SPSS software, version 11.

Results

Two hundred patients (166 [84%] female, 34 [16%] male) with palpable thyroid nodules had FNA biopsy. Cytologic smears in 176 cases (88%) were judged to be adequate; in 24 cases (12%), smears were not adequate to allow interpretation. Among cases with adequate smears, 8.6% were judged to be malignant, 57.2% were benign, and 34.2% were found suspicious for malignancy (13.1% for papillary carcinoma, 14.8% for follicular neoplasm, and 6.3% for Hürthle cell neoplasm).

Of the 176 patients with adequate cytology, 39 (31 females) have undergone surgery. Of these 39 surgical patients, 21 (53.9%) had smears interpreted as malignant and 18 smears (46.1%) were benign. All the malignant cytologies had malignant pathology, but 50% of cytologies had been suspicious to malignancy, reported as malignant in pathologic study (Table 1).

Conclusion

We performed FNA cytology on 200 patients with thyroid nodules; we found 88% of the cytology smears were adequate for assessment and 12% were inadequate; these findings are consistent with those of other researchers (2%-20%; average 15%) (9-12).

Table 1. Comparison of cytology and pathology results for patients who have undergone surgery. Data were presented as patient numbers

		FNA cytology			Total
		Benign	Suspicious	Malignant	
Surgical pathology	Benign	4	14	0	18
	Malignant	0	14	7	21
Total		4	28	7	39

Of 176 cases with adequate cytologic smears, 39 (31 female and 8 male) have undergone surgery. After follow-up and interpretation of pathologic smears, 21 cases (53.9%) were malignant and 18 cases (46.1%) were benign. Passini and De Groot reported that 50% of cases with surgical indications (malignant, suspicious for malignancy, and benign nodules with compression effect or cosmetic concerns) that had been operated, had been reported as malignant (11); this was lower than our survey.

The other result of our study was the close correspondence of malignant cytologic and pathologic results (100%). Kaplan, however, found that 2% to 3% of cytologically benign nodules were malignant in pathology reports, and 2% to 5% of cytologically malignant nodules had been found benign in histologic studies (13).

Among our cases with cytology suspicious for malignancy, pathology studies were malignant in 50% and benign in 50%. In comparison, Pacini and De Groot reported that 25% of suspicious cytologic smears had malignant pathology (11). Finally, results of cytology and pathology studies were in agreement in 59% of our cases, which had emphasized in other surveys (11,13-15).

This study and others suggest that FNA is the best, safest and the most cost-effective diagnostic method for distinguishing benign and malignant lesion in thyroid nodules (16,17). It shows the importance of the suspicious nodules in cytology as an indication for surgery; it also suggests that increasing experience in evaluating and comparing results by the cytopathologist will lead to increasing accuracy of interpretation of FNA cytologic samples.

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