

Incidence of malignancy in thyroid follicular lesions in western Saudi Arabia

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Abstract: The aim of this project was to investigate the incidence of malignancy in follicular lesions as reported by fine needle aspiration (FNA) in western Saudi Arabia in King Abdulaziz University Hospital. It was observed that a high percentage of these follicular lesions were benign, but a significant number were malignant. This study not only deals with follicular carcinoma but other malignancies whose FNA showed follicular lesions, hence raising awareness in dealing with such lesions so as not to miss these malignancies. The focus of this research was to confirm the need for surgical intervention as a significant if not the only method of reaching a diagnosis.

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1. Introduction

Thyroid follicular lesions can be represented by a wide range of pathologies from benign to malignant. These lesions include follicular carcinoma, follicular adenoma, papillary carcinoma follicular variant, Hashimoto's thyroiditis and multi nodular goiter (MNG) (Richard M. et al). Differentiating between follicular adenomas and carcinoma lesions has been topic of much research in the past (Christopher R. et al). This has prompted the conclusion that many surgeries were done unnecessarily as most lesions were benign. This might be true if one is dealing with follicular carcinoma only, but it is to the contrary when including other malignancies.

2. Materials and Methods

A retrospective data was collected from patient's records that had either total thyroidectomy or lobectomy. A total of 86 patients were looked at from June 2010 to Dec 2012. Of these 46 were included in the research as they had a preoperative finding of follicular lesions reported by fine needle aspiration

(FNA). 39 were females and 7 were males. The data also included age, ultrasound finding and final histopathology report on the surgical specimen (Table 1). The data was entered and analyzed using the statistical package for social science (SPSS Inc, Chicago, IL, USA) version 16.00. The study was approved by the ethical review committee within the Surgical department at King Abdulaziz University.

3. Results

Summary of the histopathology of follicular lesions found by FNA (Table 1).

Out of the 46 patients that were reviewed 1 (2.2%) was found to be follicular carcinoma, while, 6 (13%) were papillary carcinoma of follicular variant. 4 (8.6%) were found to be papillary carcinoma, 1 (2.2%) medullary and 3 (6.5%) Hurthel. The total malignant conditions hence accounted for 32.5%.

MNG was represented by 15 (32.6%) of cases, Hashimoto's 8 (17.4%), follicular adenoma 6 (13%), and nodular hyperplasia 2 (4.4). Hence the total benign conditions represented 67.4 %. (Table 1)

Table 1: Summary of collected data

Sample Size	Sex	Age Range	Ultrasound	FNA	Histopathology
86 of which 46 were included	39 females and 7 males	23-73 years	1.*18 MNG 2.**19 STN 3.***5 not available	46 follicular lesions	-1 follicular ca -15 MNG -6 papillary ca of follicular variant -4 papillary ca -6 follicular adenoma -2 nodular hyperplasia -3 Hurthel cell -8 Hashimoto's -1 medullary

*** Sample was done outside of the institution ** Solitary Thyroid Nodules * Multinodular Goiter

4. Discussion

Fine-needle aspiration is a minor surgical intervention, which is less painful than other surgical biopsies and less costly. The main reason for conducting a fine needle aspiration is to diagnose suspicious cases as well as decide on treatment management. Research has shown the value of fine-needle aspiration (FNA) in reaching a diagnosis, hence, avoiding unnecessary surgery (Richard E, 2002).

This has not been found to be the case when dealing with follicular lesions due the difficulty in differentiating between follicular carcinoma and adenoma on the basis of cystomorphology (Deveci, et.al, 2006). There is also the added problem with numerous benign conditions such as MNG and Hashimoto's thyroiditis that can be represented by follicular lesions on FNA, hemithyroidectomy remains the operation of choice in patients where the FNA result is follicular lesion (Chiu, 2012) (Pradeep 2013). FNA is of limited value in discriminating between non-neoplastic and neoplastic lesions in approximately 5-29% of patients. Indeterminate lesions are due primarily to overlapping cytological features found in follicular lesions (Timothy S). Studies conducted by Jo (2010) and counterparts supported the assumption that a major portion of fine needle aspirations conducted on patients with thyroid lesions result in discovery of benign tumors. These researchers reviewed 3,080 fine needle aspiration samples. The standardized 6 tier nomenclature cytology and histology follow up was applied. It was revealed that 18.6% were non-diagnostic and 59.0% benign (Jo *et al.*, 2010).

Further, a 3.4% were atypical follicular lesion of undetermined significance (AFLUS), 9.7% were suspected for follicular neoplasm (SFN), in 2.3% there were suspicions for malignancy (SM), and 7.0% were malignant. The follow up proved that of 574 cases originally perceived as non-diagnostic, 47.9% maintained that status (Jo *et al.*, 2010).

They concluded that this new standardized nomenclature could enhance inter-laboratory correlations, which can eventually become more reliable in differentiating between benign and malignant thyroid follicle lesions (Jo *et al.*, 2010).

Xing (2011) and colleagues conducted research to establish criteria for differentiating between benign and malignant thyroid follicular lesions during diagnostic testing. The researchers utilized elastography to test the efficacy of sonography diagnostic evaluation of thyroid follicular lesions. Strain ratio calculations were further applied (Xing *et al.*, 2011).

They concluded that strain ratio measurement of thyroid lesions is a very useful standardized method

for analyzing stiffness inside the areas that were examined. Consequently, it was recommended as an additional tool, which can be incorporated with B-mode sonography in enabling diagnostic performance (Xing *et al.*, 2011). Researchers further advanced that overlapping cytology features can create misdiagnoses when using FNA only (Deveci *et al.*, 2006). This has been the case in my study where a multitude of conditions were represented by the FNA finding of follicular lesion with 68% being benign, but the significant percentage of malignancy of almost 33% can not be ignored. Unless the above mentioned research have been put to the test in differentiating benign from malignant lesions and has proven success by further clinical trials, the conventional way will still remain the choice of management. Ozolins (2012) and colleagues suggested the use of immunohistochemistry to further aid the differentiation between malignant and benign thyroid tumors. They found that HBME-1 was found only in malignant lesions. Although FNA can be accurate in the diagnosis of many conditions, it falls short when reaching a diagnosis in thyroid follicular lesions despite the fact that follicular carcinoma represented only 2.2% of the total cases but the overall malignancy was almost 33%.

Conclusion

In view of the significant percentage (33%) of malignancy in thyroid follicular lesion in Western Saudi Arabia, we highly recommend surgery as a diagnostic method to confirm or rule out malignancy in patients where the thyroid FNA result is follicular lesion hence initiating the appropriate method of treatment.

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