Validity of Fine Needle Aspiration Cytology For Thyroid Surgery

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Abstract :

Background: In the near past , there were no clear policy in selection of patient for thyroid surgery but only single rule , and that is a nodule in the thyroid gland must be excised .

Aims: To investigate the sensitivity , specificity and accuracy of fine needle aspiration , in comparison with thyroid isotope scan and thyroid ultrasound . in selection of patient to surgery .

Patients & Methods: The study was conducted in AL Yarmouk Teaching Hospital from (Jan. 2002 to Jan 2006) . one hundred patients were studied with clinically palpable thyroid nodule .

female: mal ratio was 8 :1 , the mean age group 35 years , each patient has the following investigations :thyroid isotope . thyroid ultrasound and fine needle aspiration .

Results: Among the 100 patients studied, over 90% were female and 96% were clinically en thyroid revision of the accuracy of the investigation done namely thyroid isotope scan, thyroid ultrasound and fine needle aspiration .

Conclusion: Fine needle aspiration is dependable test which reduces the need for other investigations and improves the selection of patients for surgery.

Keywords:

Introduction

Palpable solitary thyroid nodule is a common reason for seeking medical advice all over the world', the incidence is 4% in the general population .[2] Solitary thyroid nodule has been considered by may clinicians as an absolute indication for surgical resection only recently has this policy been changed to a rather more selection approach[2] .Fine needle aspiration is easy to perform on one side and the low incidence of thyroid cancer range from 4-8 % [3]on the other side made it more reasonable to select certain patients with thyroid nodules for surgery. In addition, thyroid surgery is associated with definitive morbidity and should not be undertaken lightly.

Conservative management of the thyroid nodules is appropriate when malignancy can be safely excluded.

Patients & Methods

From Jan.2002 to Jan.2006, 100 patients with clinical thyroid nodules were studied in Al Yarmouk teaching Hospital ,age range from 20 years-63 years, mean age group was 35 years, with female : male ratio 8:1.

The following investigations has been done for each patients :

1-thyroid function test: T3,T4,and TSH, 95% were euthyroid and 5% were hyper thyroid .

2-Tc^{99} thyroid isotope scan : cold nodules in 70,multinodular goiter in 26, diffuse enlargement with increase uptake 3 and hot nodules in one patient.

3-thyroid ultrasound: solid nodules in 50,cystic nodule in 30,multinodular goiter 15 and diffuse enlargement in5.

4-fine needle aspiration: showed papillary carcinoma in 4, autoimmune in 2,benign 80,and were not diagnostic in 14.

Thyroid surgery had been done for 75 patients according to the results of the above mentioned investigations in the form of lobectomy 40 patients, total thyroidectomy 4 patients, and subtotal thyroidectomy for 31 patients.

Results

Among the 100 patients studied, over 90% were female and 96% were clinically euthyroid .

Revision of the validity of the investigations done namely thyroid isotope scan, thyroid ultrasound and fine needle aspiration revealed that the finding of a cold nodule on isotope scan has sensitivity of 98% and a specificity of 15% (table1).

While the finding of a solid nodule on thyroid ultrasound has a similar sensitivity but a higher of a specificity of 30% (table 2).

Fine needle aspiration has a similar sensitivity however its specificity were 94% (table3).

Table 1: thyroid isotope scan

Isotope scan	No.	Surgery	%	Cancer	%
Cold nodule	70	60	60%	4	4%
MNG	26	11	11%	1	1%
Diffuse enlargement	3	3	3%	0	
Hot nodule	1	1	1%	0	
Total	100	75	75%	5	5%

MNG: multi nodular goiter

Table 2 Thyroid ultrasound

Ultrasound diagnosis	No.	Surgery	%	Cancer
solid nodule	45	40	40%	4
Cystic nodule	35	20	20%	0
MNG	15	11	11%	1
Diffuse enlargement	5	4	4%	0
Total	100	75	75%	5%

Table 3 :fine needle aspiration and histopathology

FNA diagnosis	No.	Surgery	histopathology
follicular neoplasm	11	11	1 follicular ca
papillary ca	4	4	1 benign
Benign	58	49	1 follicular ca
Auto immune	3	0	
Not diagnostic	24	24	all benign
Total	100	75	cancer 5 benign 70

FNA: fine needle aspiration.

Discussion

This study has already demonstrated that fine needle aspiration is effective in selection of patient with thyroid nodules and reduce the need for other investigations i .e thyroid isotope scan and thyroid ultrasound however, there are certain points worth mentioning:

1-It is cytological examination and it is difficult to differentiate between follicular adenoma and follicular carcinoma because it need tissue examination[5].

2-The potential for false negative diagnosis is still there and maintained as low as 6%[6].

Reviewing other literatures, a study held in Jordan at King Hussein Medical center by Jaber in1998[7] was comparative to this study.

Other study held in St.Thomas's Hospital, London by Mehrota in 2005 [8] showed better than this study because they used ultrasonic study – guided core sampling which proved better than free –hand fine needle aspiration .

Other study was done in New York 2006 by Lubitc CC[9], the results illustrate that micro array analysis of fine needle aspiration is feasible and has the potential to improve the accuracy of fine needle aspiration in categorizing benign from malignant lesions beyond routine cytological evaluation.

Another study held in USA 2006 by Barroeta JE[10] aiming to assess if there is a correlation between the risk of malignancy and number of thyroid nodules, the study concluded that the cancer risk is similar for patients with one or two nodules over 1-cm and decreases with three or more thyroid nodules.

A study held in France 2003 by Boutin P[11],the authors propose fine needle aspiration biopsy in the following cases:

a single palpable nodule and hypo fixation on scintigraphy or a surgical contraindication and direct surgery in symptomatic thyroid disease or if there are one or several full nodules >2cm.

An interesting study done in USA in 2006[12]a cohort of 303 thyroid FNA cases with follow up thyroidectomy. The results suggests that FNA diagnosis of Hurthle lesion neoplasm does not predict more malignancy than follicular lesion neoplasm.

So we still need to improve our approach in selection of patient to thyroid surgery.

Conclusion

From this study it is evident that fine needle aspiration is:

1-dependable.

2-aids the selection of patients for thyroid surgery

3-decrease the need for other investigations.

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