

Correlation of Clinical Presentation with Investigations and operative Findings in Solitary Nodule Thyroid

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Ideal management of solitary nodule thyroid has remained controversial. Evaluation in addition to clinical assessment include a list of investigations, reliability of which involves great uncertainty. In this study of one hundred clinical solitary nodule thyroid operated at Mayo Hospital, Lahore, the role of clinical examination and investigations is evaluated and correlated with operative findings. Clinical examination failed to differentiate solitary from dominant nodule in 26% cases. There was overall 14% incidence of malignancy. FNAC proved highly accurate with only 6% false negative and 0% false positive prediction for malignant nodules.

Key words: Solitary nodule thyroid, management

A solitary thyroid nodule is a defined discrete, focally enlarged lump in the gland, diagnosed clinically. In presence of one nodule, palpation usually fails to depict a second nodule if less than one centimeter¹. A number of clinical solitary nodules turn out to be dominant nodule of a multinodular goiter on investigations, operation or histopathology.

About 50% of patients admitted for thyroid disease have a solitary nodule. It is prevalent in more than 5% of adult population². A solitary nodule represent a single cyst, colloid nodule, benign or malignant tumour or thyroiditis³ etc.

A focal asymmetric swelling in the neck may cosmetically disturb the patient, or may increase in size to an extent to mechanically compress the trachea or oesophagus, or may turn into an autonomous hyperfunctioning state with systemic effects. Malignancy can appear or present in a solitary nodule. Majority of our patients attending surgical outpatient department for thyroid disease are young female with cosmetic reason and with systemic effects of toxic nodule. With better awareness people are more concerned about potential malignancy in the goiter³.

Evaluation of solitary thyroid nodule include clinical examination, biochemical status of thyroid, isotope scanning, ultrasonography, fine needle aspiration and cytology. Biochemical status of thyroid activity is estimated by serum level of free T₃, T₄ and TSH. Technitium scan provide functional assessment of nodule as cold, warm and hot. Ultrasonography is simple non invasive and provide highly accurate and detailed information on physical character of goiter^{5,6}. No reliable sonographic criteria are available that can distinguish benign from malignant lesions^{7,8}. Fine needle aspiration cytology is now front line investigation in solitary thyroid nodule⁹. It is an outdoor, inexpensive¹⁰, free of complications test that provide reliable and accurate tissue diagnosis in high proportion of patients¹¹. Main limitation is in patient with follicular neoplasm¹². Selection of one or

all investigations have remained controversial and dependent on subjective experience and facilities available.

Most surgeons agree on procedure of total thyroid lobectomy and isthmectomy in continuity on the side of nodule. In spite of thorough clinical examination and investigations some clinical solitary nodules turn out dominant nodules of multinodular goiter on surgery or even on microscopic examination.

Material and methods

This study consists of one hundred patients of clinical solitary nodule thyroid who presented in the Outpatient department of Surgery, Mayo Hospital, Lahore. In each case a complete history was taken with special reference to specific symptoms of tracheal oesophageal and recurrent laryngeal nerve involvement, hyper or hypo-thyroidism, general constitutional symptoms, factors of anxiety and fear of malignancy etc., Previous history of any treatment either medical, surgical or radiological is noted. A thorough general and local examination is done. Following specific investigations were under taken.

Serum T₃, T₄ and TSH, specially in clinically thyrotoxic patients; Iodine or Technitium scan; thyroid ultrasound using high frequency real time scanner; FNAC performed as outpatient procedure in all patients, without ultrasound guidance. Other investigations included indirect laryngoscopy, x-ray neck soft tissue, and baseline haematologic and biochemical investigations for fitness for anaesthesia.

In toxic nodules, preoperative antithyroid drugs were given to make patient euthyroid clinically and biochemically. All patients were operated in euthyroid state, under general anaesthesia with antibiotic prophylaxis. Recurrent laryngeal never identified in all cases. Inferior thyroid artery ligated after origin of branch to parathyroid gland. Lobectomy and isthmectomy was the procedure of choice. Thyroid tissue excised was sent for histopathology. Patients were followed postoperatively for any complications.

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Results

One hundred cases of clinical solitary nodule thyroid are included in this study with sex distribution.

Table 1.

Sex	n=
Male	19
Female	81

Surgery was planned because of following indications.

Table 2

Indication	n=
Malignancy	8
Compression symptoms	26
Hyperthyroidism	12
Cosmetic	33
Anxiety and fear of malignancy	21

Table 3 FNAC was done in all cases with following findings

Findings	n=
Colloid nodule	63
Colloid cyst	18
Adenoma	1
Malignant	8
Thyroiditis	1

After different levels of evaluation different pathologies showed varying results

Table 4

Solitary thyroid nodule	
Total clinical solitary nodules	100
On ultrasound	82
On isotope scan	84
After surgery and histopathology	68
Cyst swelling	
Clinically	8
On ultrasound	21
On histopathology	12
Toxic nodule	
Clinically	18
On biochemistry	11
Malignant nodules	
On FNAC	8
On histopathology	14

Histopathological findings are shown in Table 5

Table 5.

Colloid nodules goiter	32
Colloid cyst	12
Thyroid hyperplasia	14
Follicular adenoma	27
Thyroiditis	1
Follicular carcinoma	4
Papillary carcinoma	9
Medullary carcinoma	1
Anaplastic carcinoma	0
Lymphoma	0

Preoperative FNAC and specimen histopathology showed following correlation.

Table 5. Comparison of FNAC and histopathology

FNAC	Benign	No.	Histopathology	
			Benign	Malignant
		92	86	6
	Malignant	8	0	8

Discussion

About 2/3rd of patients with thyroid disease presenting in our Outpatient Department had the solitary thyroid nodule.

Patients were initially evaluated and only clinical solitary thyroid nodules were included in this study. This study deals with a general spectrum of clinical presentation of solitary nodule, its evaluation, investigations, and correlation with the operative and histopathological findings. In these 100 clinical solitary nodules, there were 19 male and 81 female patients. Age ranged from 14 to 76 years with a mean age of 45 years.

Most of the patients presented with obstructive symptoms and cosmetic reasons. In our population there is better general awareness about potential malignancy in goiter. Different investigative modalities were utilised. Ultrasound provided non-invasive, cost effective and reliable information on physical character of thyroid. Its features were described in terms of echogenicity, cystic component and nodularity. It was able to pick 18 multinodular goiters out of 100 clinical solitary nodules. It also diagnosed 21 cystic lesions. But its role in tissue diagnosis is not reliable. No pathognomonic features are described that can distinguish benign from malignant nodules. Radioactive iodine and technitium scans provided valuable information on the functional status of nodule, as cold, warm or hot. In this series there were 65 cold nodules and 9 warm nodules. Scan was also able to pick 16 cases as multinodular goiter.

FNAC is found safe, inexpensive, easily performed outdoor procedure. There is no need of anaesthesia and it is free of complications, with no chance of tumour dissemination. In our series we found colloid nodules in 63%, colloid cyst 18%, thyroiditis 1% and malignancy in 8% cases. Follicular carcinoma cannot be diagnosed on FNAC, but diagnosis of papillary and anaplastic carcinoma help formulate definite plan of management. In cystic lesions it can be therapeutic as well. It is reliable procedure with very low false positive and false negative results. In this series out of 92 benign nodules on FNAC, 6 later turned out to be malignant on histopathology. All eight nodules found malignant on FNAC were later confirmed to be malignant on histopathology. There is 6.5% false negative result and no false positive error.

There were 18 patients with toxic symptoms. These were first made euthyroid with antithyroid drugs and then operated. Incidence of location of solitary nodule in different parts of gland included 63% in right lobe, 32% in left lobe and 5% in isthmus.

Spectrum of surgical procedure performed is very variable, depending on individual case, preoperative

diagnosis and extent of disease. Lobectomy on the side of nodule plus isthmectomy in continuity upto junctions of isthmus to opposite lobe was the procedure of choice. It was done in 74% cases. Others procedure included subtotal thyroidectomy in 16%, lobectomy in 9%, isthmectomy 5%, near total thyroidectomy in 2% and block neck dissection in 4% cases.

Histopathology of the resected thyroid included colloid goiter 32%, colloid cyst 12%, follicular adenoma, 27% thyroiditis, 1%, thyroid hyperplasia 14%, follicular carcinoma 4%, papillary carcinoma 9% and medullary carcinoma 1%.

Male to female ratio is 1:4 for solitary thyroid nodule. The ratio in benign lesions is 1:5 and in malignant lesions is 1:2. Malignant to benign ratio in males is 1:4 and in female is 1:7. Incidence of malignancy in male is 21% and in females is 12.2%. Incidence of malignancy in this series was 14%. Out of this 4 patients were male and 10 female. Among males, one follicular carcinoma, 3 papillary carcinoma, no medullary or anaplastic carcinoma found. Among female 3 follicular 6 papillary, one medullary and no anaplastic carcinoma found. So out of 14 malignant cases, there were 4 follicular, 9 papillary and one medullary carcinoma. No case of anaplastic carcinoma found.

Postoperatively patients were evaluated for development of any complications. Only one case of bleeding in the submuscular plain was found on the operation day, in a hypertensive patient. She was reexplored, generalised ooze was found from thyroid bed. Two patients had wound infection in the form of cellulitis at wound margin, that settled with antibiotics. Three of our patients went into transient hypocalcaemia, but responded to conservative treatment and were normal within two weeks. One patient became hoarse postoperatively but recovered fully within 72 hours. No case of thyrotoxic crisis seen. No death occurred in immediate or early post

operative period. FNAC stands out as the ideal investigations with good support from radioactive iodine scan or ultrasound, in the evaluation of solitary nodule thyroid. With good history and thorough physical examination, long list of investigation can be avoided, with less financial burden on patient and state.

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