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SOLITARY THYROID NODULE;
FREQUENCY OF MALIGNANCY AT COMBINED MILITARY HOSPITAL RAWALPINDI

DR. AIMEL MUNIR TARRAR
MCPS, MRCS, FCPS
Combined Military Hospital
Rawalpindi

DR. MADIHA SAEED WAHLA
MCPS, FCPS
Combined Military Hospital
Rawalpindi

DR. SOHAIL ILYAS
FCPS
Combined Military Hospital
Rawalpindi

Dr. Obaid Ullah Khan
FCPS
Combined Military Hospital
Rawalpindi

Dr. Ahmed Waqas
MCPS, FCPS
Combined Military Hospital
Rawalpindi

Dr. Ahmed Raza
MCPS, FCPS
Combined Military Hospital
Rawalpindi

ABSTRACT... Objectives: To determine frequency of malignancy in solitary thyroid nodule. **Design:** Case-series study. **Place and Duration of Study:** The study was conducted at Department of Surgery, Combined Military Hospital Rawalpindi, from April 2002 till April 2003. **Patients and Methods:** Sixty patients with clinical solitary thyroid nodule fulfilled the selection criteria and were included in the study. Thyroid function tests, ultrasonography and thyroid scanning was done. Finally FNAC and histopathology were done in all the operated cases and record was evaluated. **Results:** Out of 60 cases studied, 8 (13.33%) were found to have malignant lesions. The remaining 52 (86.67%) cases had benign pathology. Male patients with solitary thyroid nodule showed a higher incidence of malignancy 17.65% as compared to females 11.63%. Maximum malignant cases (50%) were found between the ages of 31 to 40 years. Papillary carcinoma was the most common malignancy (50%) found in our study. **Conclusions:** The incidence of malignancy in solitary thyroid nodule is quite high (13.33%). So people should be educated to attend thyroid clinics for early diagnosis and adequate treatment.

Key words: Solitary Thyroid Nodule, Malignant, FNAC, Histopathology

INTRODUCTION

Carcinoma of the thyroid gland is an uncommon cancer but, none the less, is the most common malignancy of the endocrine system. It accounts for 10.5% of all malignant tumors of head and neck region[1]. Thyroid neoplasia can present either as discrete nodules or diffusely enlarged gland, although the former is most likely to be malignant[2]. Nodular goiter is the commonest lesion of the thyroid gland[3]. Prevalence of thyroid nodule within a given population depends upon a variety of factors that include age, gender, diet, iodine deficiency and therapeutic and environmental radiation exposure. Incidence of malignancy in solitary thyroid nodule (STN) varies from 4.7-18.3%[4].

A discrete swelling in one lobe with no palpable abnormality elsewhere is termed as isolated or solitary thyroid nodule. Whereas the preferred term for a similar swelling in a gland with clinical evidence of generalized abnormality in the form of a palpable contralateral lobe or generalized mild nodularity is called a dominant nodule. A dominant nodule within a multinodular goiter should be evaluated like a solitary nodule[5]. Thyroid cancer like gallbladder carcinoma is one of the common non-sex related sites of malignancy in females as compared to males[6]. It is more common in the third, fourth and fifth decades of life[7].

Goiter is a common ailment seen in mountainous regions[8]. Preoperative identification of a malignant tumor in thyroid pathology is difficult and often unreliable[9]. The key role of a physician evaluating thyroid nodularity is to recognize and distinguish malignant lesions pre-operatively to avoid unnecessary surgery.

MATERIALS AND METHODS

In this study 60 patients with the clinical diagnosis of solitary thyroid nodule were selected from five modern, well equipped, general surgical wards of Combined Military Hospital, Rawalpindi, a tertiary care hospital from April 2002 to April 2003. 43 patients were females and 17 were males. The patients were selected primarily on the basis of clinical evaluation with ages ranging from 17 years to 63 years. The patients were hospitalized either for further investigation, evaluation of thyroid or to undergo surgery.

Detailed history was taken and the patients were carefully examined for physical characteristics of the nodule and to determine the presence of other nodules. They were admitted with routine investigations and investigations specific to the thyroid including serum T3, T4, TSH and serum calcium. Imaging techniques such as thyroid scan and ultrasound of the solitary nodule were also done. Finally FNAC and histopathology were done in Armed Forces Institute of Pathology, Rawalpindi.

Pregnant females, patients unwilling or apprehensive about being including in the study and clinically obvious multinodular cases were not included in the study. Also outdoor patient department cases which did not require admission were not included in the study because of difficulty in data collection and follow up.

Data for each patient was collected on a separate patient's proforma. The collected data was thoroughly analyzed and assessed in SPSS version 10.

RESULTS

Sixty subjects with clinical solitary thyroid nodules were enrolled in the study. There were 17(28.33%) males and 43(71.67%) females with a male to female ratio of 1:2.52. Age of enrolled subjects ranged from 11 to 63 years. Most 41(68.33%) of the patients belonged to Azad Kashmir and other northern hilly areas of Pakistan.

Various clinical presentation are shown in table-III. It was found that 50 (83.33%) of the patients were euthyroid, 9 (15%) hyperthyroid and 1 (1.67%) was hypothyroid on thyroid function tests. These values differ from those seen on clinical assessment.

Table-I. Age Distribution of patients with STN (n=60)

Age in Years	Number of Patients (%)
11-20	3 (5%)
21-30	15 (25%)
31-40	24 (40%)
41-50	11 (18.34%)
51-60	5 (8.33%)
> 60	2 (3.33%)

Table-II. Sex incidence of patients of STN (n=60)

Sex	Number of Patients (%)
Male	17 (28.3%)
Female	43 (71.7%)
Total	60

Thyroid scan confirmed that 9 (15%) cases having hot nodule and 5 (8.33%) cases had warm nodules and 46 (76.67%) of the cases showed cold nodules so it was by far the most common group in this study. Ultrasonographic findings revealed 43 (71.67%) swellings as solid, 5 (8.33%) cystic and 12 (20%) as mixed in nature (table-VI, VII).

FNA was done in all cases. 55 (91.66%) were found conclusive aspirates, these were confirmed accurate on histopathology as well. (table-IV).

Histopathology was done in all the operated cases. 52 (86.67%) were benign lesions. 8 (13.33%) patients out of the sixty were diagnosed as having malignant lesions on histopathology. Malignancy was more common in solid type 7 (16.27%) of thyroid nodules than mixed 1 (8.33%) or cystic lesions. Out of the 8 patients with malignant thyroid nodule, 07 (87.50%) were found cold on thyroid scan. One case with a warm nodule on thyroid scan also showed evidence of malignancy on histopathology. Detailed accounts of results are shown in table-V.

Table-IV. FNAC in patients with STN (n=60)

Type of Aspirate	Specific Diagnosis	No of Patients	Percentage
Non-malignant cells seen -	Adenomatous colloid goiter	35	81.67%
	Follicular Adenoma	4	
	Hashimoto's Thyroiditis	1	
	Tuberculosis	1	
	Simple Cysts	3	
	Abscess	1	
	Toxic Adenoma	4 (49)	
Malignant cells seen -	Papillary Carcinoma	3	10%
	Follicular Carcinoma	1	
	Medullary Carcinoma	1	
	Anaplastic Carcinoma	1	
	Lymphoma	0	
	Undifferentiated Carcinoma	0 (6)	
Suspicion of Malignancy		2	3.3%
Inadequate Aspirate		3	5%

Table-III. Clinical presentation of cases of STN (n=60)

Sign and Symptoms	Number of Patients (%)
Swelling in front of Neck	60 (100%)
Palpable C.L.N	4 (6.67%)
Dysphagia	3 (5%)
Hoarseness of voice	2 (3.33%)
Recent rapid increase in size	3 (5%)
Intolerance to heat/cold	7 (11.67%)
Palpitations	7 (11.67%)
H/O Radiation to Neck	-
Family History of Thyroid Disease	18 (30%)

DISCUSSION

The incidence of solitary nodule that is confirmed malignant on surgical excision ranges from 8 to 33 %[4]. Thyroid malignancy is more common in females but incidence before puberty and after menopause is equal in both sexes[10]. Similarly discrete thyroid swellings are 3-4 times more common in women than men[11,12]. In this study 18 patients (30%) gave positive family history of thyroid disease and most of them were from the northern hilly areas of Pakistan. A similar observation was made in a local study carried out in Pathology department of Army Medical College, Rawalpindi between 1993 to 1995[12]. Most 41(68.33%) of the patients belonged to Azad Kashmir and other northern hilly areas of Pakistan. These along with a high incidence of 34 cases (65.38%) having colloid goiter found in the present study is probably due to dietary deficiency of iodine at hilly areas. Same observation was seen in a study carried out at the department of Surgery at CMH, Kharian from January 1997 to January 2000[4].

Majority of the malignant cases showed cold nodule on thyroid scan, thus emphasizing the need for more thorough follow-up of the patients presenting with cold nodules. The incidence of malignancy in cold nodules in this study was 15.22%. Malignancy was also seen in one of the warm nodules as well. Same was confirmed in the past studies[11]. FNAC was performed in all the patients and no malignant cells were seen in 49 cases. 06 (10%) aspirates showed signs of malignancy while 2 (3.33%)

Table-V. Histopathology findings in patients (n=60)

Histopathological Diagnosis	Number of cases (%)
Benign lesions	**52 (86.67%)**
Adenomatous Colloid goiter	36 (69.23%)
Follicular Adenoma	6 (11.53%)
Hashimoto's Thyroiditis	1 (1.92%)
Simple Cyst	3 (5.77%)
Abscess	1 (1.92%)
Toxic Adenoma	4 (7.69%)
Tuberculosis	1 (1.92%)
Malignant Lesions	**08 (13.33%)**
Papillary Carcinoma	4 (50%)
Follicular Carcinoma	2 (25%)
Anaplastic Carcinoma	1 (12.5%)
Medullary Carcinoma	1 (12.5%)

Table-VI. Relationship of ultrasonographic findings with malignancy

Nature of Nodule	Total no of cases	malignant cases
Cystic Nodule	5	-
Solid Nodule	43	7 (16.27%)
Mixed	12	1 (8.33%)

Table-VII. Relationship of thyroid scan with malignancy

Scan of Nodule	Total number of cases	Declared Malignant
Cold	46	7 (15.22%)
Warm	5	1 (11.11%)
Hot	9	-

aspirates had suspicion of malignancy, which were later on confirmed on histopathology as papillary and follicular carcinomas. In 3 cases (5%) the aspirate was inadequate and decision could not be made on FNAC. Histopathology confirmed that FNAC was 91.67% accurate in diagnosing a lesion in this study. This is consistent with other studies[13,14,15], 08 patients out of 60 were diagnosed as malignant. The clinical significance of solitary thyroid nodule lies in its malignant potential. Incidence of malignancy in solitary thyroid nodule reported in various studies ranges from 8-33% with majority reporting incidence around 20%[3,12]. In this study incidence of malignancy in solitary thyroid nodule was 13.33%. Papillary carcinoma was the commonest lesion (50%) followed by follicular 25%, medullary and anaplastic carcinoma 12.5% each. Comparison with few other series[3,7,13] showed this trend to be more or less similar to our findings.

CONCLUSIONS

The incidence of malignancy in solitary thyroid nodule is quite high. The foremost thing is to create awareness among the masses to seek medical help for proper evaluation and diagnosis so that adequate treatment can be initiated at an earlier stage of the disease.

The availability of FNAC has substantially increased diagnostic precision. It improves surgical selectivity and cost of patient care. The procedure is almost without complications.

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Correspondence Address:
Dr. Aimel Munir Tarrar
Surgeon
Modern Flour Mills, Naseerabab, Peshawar Road
Rawalpindi
aimelmunir@hotmail.com

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PREVIOUS RELATED STUDIES

- Waseer MH, Malik MA, Hussain R. Solitary thyroid nodule; role of FNAC. Professional Med J Jun 2001; 8(2): 251-256.

A lot of people have gone farther than they thought they could because someone else thought they could.

Zig Ziglar