

A CLINICAL STUDY OF THYROID CANCERS IN A TERTIARY CARE HOSPITALPrasadula Ashok¹, Paidi Ramesh Chandra²¹Assistant Professor, Department of Surgery, Andhra Medical College, Visakhapatnam.²Assistant Professor, Department of ENT, Andhra Medical College, Visakhapatnam.**ABSTRACT****BACKGROUND**

Thyroid carcinoma is overwhelmingly the most common type of endocrine malignancy. Clinically-recognised thyroid carcinomas constitute less than 1% of all malignant tumour. Improvements in diagnostics and understanding the pathophysiology have made the treatment more effective with good long-term results.

The aim of the study is to study the clinical pattern, behaviour and management of carcinoma of thyroid.

MATERIALS AND METHODS

50 patients of histopathologically-proven thyroid cancers treated during the period of 2 years from May 2006 to May 2008 were studied. Detailed history and physical findings were noted along with the investigations and treatment given.

RESULTS

Thyroid carcinoma formed 1.5% of all cancers treated during the period. It formed 17.45% of all thyroid swellings admitted for treatment during the same period. The ratio of female-to-male in this study was 2.9:1. Most of the cases of carcinoma (82%) were seen in the 21-50 years age group. All patients in this study had a goitre and 20% of patients presented with lymphadenopathy and hoarseness of voice. Fine-Needle Aspiration Cytology (FNAC) was the common diagnostic test done. Total thyroidectomy was the most common surgery done and papillary carcinoma was the most common histopathology seen. Transient hypocalcaemia was the most common postoperative complication seen in 20% of patients.

CONCLUSION

Thyroid cancers affect young adult females presenting as slow growing tumours. Majority of the tumours are papillary type in the early stage with good prognosis. FNAC is a simple test to detect cancer and total thyroidectomy is the procedure of choice for treatment.

KEYWORDS

Fine-needle Aspiration Cytology, Papillary Carcinoma, Total Thyroidectomy, Thyroid Carcinoma.

HOW TO CITE THIS ARTICLE: Ashok P, Chandra PR. A clinical study of thyroid cancers in a tertiary care hospital. *J. Evid. Based Med. Healthc.* 2017; 4(94), 5768-5771. DOI: 10.18410/jebmh/2017/1161

BACKGROUND

Thyroid cancer is overwhelmingly the most common type of endocrine malignancy and has the highest mortality among endocrine neoplasms except for ovarian cancer.¹ Even though thyroid cancer is more common in women than in men, death from thyroid cancer is more common in men. Clinically-recognised thyroid carcinomas represent less than 1% of all malignancies.² Thyroid cancers display a wide range of aggressiveness from the more indolent papillary cancer to the uniformly lethal anaplastic cancer. Because of the developments in diagnostic methods and pathophysiological understanding, asymptomatic stages of the disease are detected with increasing frequency, population and patients may be treated more efficiently.

The declining mortality rates are largely due to early diagnosis and effective therapy applied at an early tumour stage when it is most amenable to surgery and I-131 therapy. Fine-Needle Aspiration Cytology (FNAC) plays an important role in the diagnosis of thyroid cancer and allows the clinician to plan a rational treatment strategy.

The protracted and generally favourable course of well-differentiated carcinomas complicates the evaluation of various treatment methods. There are no long-term prospective studies of the treatment of this disease. The clinical management of the well-differentiated thyroid carcinomas rests on retrospective studies and individual clinical experiences. Many studies have recommended total or near-total thyroidectomy followed by postoperative I-131 thyroid remnant ablation for most patients with differentiated thyroid carcinoma regardless of age and almost everyone preferred long-term T4 therapy to doses sufficient to lower the Thyroid-Stimulating Hormone (TSH) levels to 0.01-0.5 μ units/mL. External radiation and chemotherapy play a very important role in the treatment of undifferentiated thyroid carcinoma.

MATERIALS AND METHODS

In this clinical study of thyroid cancers, 12,372 cases, which were admitted in various surgical units in King George

Financial or Other, Competing Interest: None.
Submission 25-11-2017, Peer Review 04-12-2017,
Acceptance 11-12-2017, Published 13-12-2017.
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DOI: 10.18410/jebmh/2017/1161



Hospital attached to Andhra Medical College, Visakhapatnam, for a period of 2 years from May 2006 to November 2008 were studied. Out of these, patients with thyroid disorders were 287. A total of 50 cases of histopathologically-proven cases of thyroid cancers in all age groups and both sexes were included. Detailed examinations of each case were done and data entered in the case sheet for analytical study. All patients whose final histopathological diagnoses were proven benign were excluded.

Patients whose FNAC revealed follicular neoplasms, but the histopathology revealed follicular adenomas were also excluded. The study required certain investigations to be conducted on the patient viz., routine blood investigations, thyroid profile, radiography of the chest and neck, FNAC of the thyroid gland and lymph nodes. Ultrasound of the neck was done in all cases to determine whether thyroid swellings are multinodular or solitary nodules and to determine the cervical nodal involvement. Computed tomography scan was done when needed. Indirect laryngoscopy was done in all patients to determine the status of the vocal cords specifically their movements. All the patients underwent surgery after proper consent. Most of the patients were discharged with a clean and healthy wound except a few with postoperative complications.

RESULTS

Thyroid carcinomas formed 17.45% of all thyroid swellings admitted to the hospital during the period. Number of female patients were 39 and male patients were 11. Female:male ratio in this study was 2.9:1. In this study, most of the cases (82%) of carcinoma thyroid occurred in the age group of 21-50 years with a minimum of 14 years and a maximum of 70 years. Only 1 case (2%) was seen after 60 years of age. In this study, all patients (100%) presented with a swelling of the thyroid. 10 cases (20%) presented with secondaries in cervical lymph nodes. 2 cases (4%) presented with skull secondaries. Most of the patients (32%) presented with symptoms during the past 6 months. Only 4% of cases had swelling since 3 years.

Total Number of Patients	Number of Patients	Percentage
Total number of thyroid disorders	287	2.31
Total number of thyroid carcinomas	50	17.45

Table 1. Incidence

Sl. No.	Sex	Number of Patients	Percentage
1.	Females	39	78
2.	Males	11	22

Table 2. Sex Incidence of Carcinoma of the Thyroid

Symptoms	Number of Subjects	Percentage
Thyroid swelling	37	74
Lymph node mass	10	20
Dysphagia	1	2
Toxicity	-	-
Distant metastasis	2	4

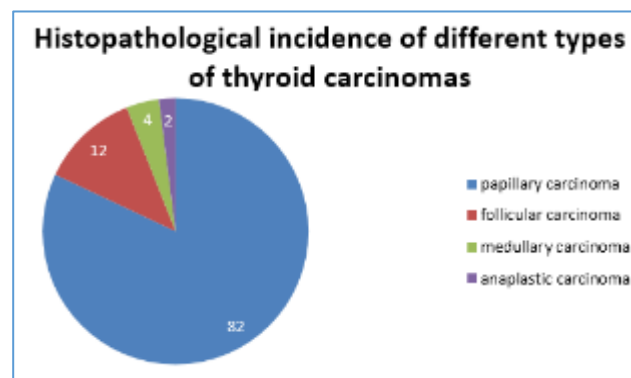
Table 3. Clinical Features

Duration (Months)	Number of Subjects	Percentage
0-6	16	32
7-12	14	28
13-18	8	16
19-24	8	16
25-30	2	4
31-36	2	4

Table 4. Duration of Symptoms

FNAC Diagnosis	Number of Subjects	Percentage
Papillary carcinoma	41	82
Follicular carcinoma	6	12
Medullary carcinoma	2	4
Anaplastic carcinoma	1	2
Total	50	100

Table 5. FNAC Result



Histopathological Incidence of Different Types of Thyroid Carcinomas

Stage I	Any T	Any N	M0
Stage II	Any T	Any N	M1
Over 45 Years Old			
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T3	N0	M0
	T1	N1a	M0
	T2	N1a	M0
	T3	N1a	M0
Stage IVA	T1	N1b	M0
	T2	N1b	M0
	T3	N1b	M0
	T4a	Any N	M0
Stage IVB	T4b	Any N	M0
Stage IVC	Any T	Any N	M0

Table 6. Differentiated Thyroid Cancer (PTC, FTC, Hurthle Cell) Under 45 Years Old

Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T3	N0	M0
	T1	N1a	M0
	T2	N1a	M0
	T3	N1a	M0
Stage IVA	T1	N1b	M0
	T2	N1b	M0
	T3	N1b	M0
	T4a	Any N	M0
Stage IVB	T4b	Any N	M0
Stage IVC	Any T	Any N	M1

Anaplastic Thyroid Cancer			
Stage IVA	T4a	Any N	M0
Stage IVB	T4b	Any N	M0
Stage IVC	Any T	Any N	M1

Table 7. Medullary Thyroid Cancer

(PTC - Papillary thyroid cancer, FTC - Follicular thyroid cancer, MTC - Medullary thyroid cancer).

Treatment of Thyroid Cancers-

Papillary Carcinoma of Thyroid- Most cancers are treated with removal of the thyroid gland (total thyroidectomy), although small tumours that have not spread outside the thyroid gland maybe treated by just removing the side of the thyroid containing the tumour (lobectomy). If lymph nodes are enlarged or show signs of cancer spread, they will be removed as well. In addition, recent studies have suggested that patients with micropapillary carcinomas (very small thyroid cancers) may safely choose to be managed by close observation with ongoing ultrasounds rather than have immediate surgery. Treatment after surgery depends on the stage of the cancer. Radioactive is sometimes used after thyroidectomy for early stage cancers (T1 or T2, N0, M0), but the cure rate with surgery alone is excellent. If the cancer does come back, radioiodine treatment can still be given. RAI therapy is often given for more advanced cancers such as T3 or T4 tumours or cancers that have spread to lymph nodes or distant sites.

Follicular and Hurthle Cell Cancers- Treated by surgery to remove the half of the thyroid gland that has the tumour (a lobectomy). If the tumour turns out to be a follicular cancer, a second operation to remove the rest of the thyroid is usually needed (this is called a completion thyroidectomy). Hurthle cell carcinomas are often treated like follicular neoplasms. A lobectomy is usually done first. If the diagnosis is confirmed, a completion thyroidectomy is done. A thyroidectomy maybe done as the first surgery, if there are signs to show that the cancer has spread, in which case the whole thyroid gland in the first place.

Medullary Thyroid Carcinoma- Total thyroidectomy is the main treatment for MTC and often cures patients with stage I or stage II MTC. Nearby lymph nodes are usually removed as well (MTC cells do not take up radioactive iodine, there is no role for radioactive iodine therapy in treating MTC).

Anaplastic Carcinoma- Surgery is often not helpful as treatment. If the cancer is confined to the area around the thyroid, which is rare, the entire thyroid and nearby lymph nodes maybe removed. The goal of surgery is to remove as much cancer in the neck area as possible, ideally leaving no cancer tissue behind. Because of the way anaplastic carcinoma spreads, this is often difficult or impossible. Radioactive iodine treatment does not work in this cancer and so is not used. External beam radiation therapy may be used alone or combined with chemotherapy.

In our study, patients who were diagnosed as follicular neoplasm by FNAC underwent hemithyroidectomy initially and later a completion thyroidectomy for proven cases. Patients with FNAC diagnosis as nodular goitre underwent subtotal thyroidectomy followed by completion thyroidectomy later. The predominant variety of thyroid cancer in our study was papillary carcinoma in 41 patients (82%) and next common was follicular carcinoma in 6 patients (12%). None of the other variants of papillary and follicular carcinomas were found in the histopathological study. Two patients of medullary carcinoma and 1 patient of anaplastic carcinoma were treated. 10 patients (20%) presented with lymph node secondaries along with primary in the thyroid. In none of the cases, major postoperative complications were encountered. Temporary vocal cord paralysis was noted in 4% subjects, which later recovered totally after 4-6 weeks. 10 patients had hypoparathyroid episodes, which were treated with intravenous calcium gluconate. All patients were advised 0.2-0.3 mg of thyroxine per day. Though all the patients were advised regular follow up about 56% patients turned up for more than 6-9 months.

DISCUSSION

In India, thyroid malignancies constitute 1.2% and 1.9% of malignancies in men and women, respectively.³ In the present study, the incidence of thyroid carcinoma is 17.45% as our hospital is a tertiary care centre. In reality because of the fact that many thyroid cancers never become clinically apparent and as such are never diagnosed, the true incidence is not known. In an autopsy study, Fukunaga and Yatani reported data from multiple countries that there was an 11% overall incidence of occult thyroid cancer.⁴ Women are affected more than men and the ratio is somewhere around 3:2, whereas in our study, it was 2.9:1.

Overall, papillary carcinoma is more common than follicular, medullary and anaplastic cancer. In general, papillary carcinoma peaks in early adult life and then gradually decreases in frequency, whereas the incidence of follicular carcinoma peaks later. Anaplastic cancer occurs later in life than differentiated cancers. Exposure to radiation is the only proved thyroid carcinogen. This was first recognised by Duffy and Fitzgerald in 1950.⁵ About 90% of radiation-exposed thyroid cancers were found to be papillary thyroid cancers. More recently, radiotherapy to the neck in adults resulted in the subsequent development of the anaplastic carcinoma. In addition, thyroid carcinoma is arising as a secondary carcinoma in survivors of Hodgkin's disease. In countries, where there is adequate iodine intake, the well-differentiated thyroid carcinomas constitute 80% of all thyroid cancers. In areas with iodine deficiency, an elective increase in follicular and anaplastic cancers is the rule. Chronic stimulation by increased TSH level leads to hyperplasia and possibly carcinomatous degeneration in iodine-deficient countries.⁶

Papillary and follicular carcinomas present as a firm to hard, solitary thyroid nodule, whereas undifferentiated cancer is characterised by a stony hard, irregular nodular gland fixed to the underlying tissues. Solid lesions have a

21% risk of malignancy, cystic 7% and mixed lesions 12%. 5-10% of multiple nodules and 10-20% of solitary nodules are malignant.^{7,8} Papillary carcinoma known for its lymphatic spread presents with cervical lymphadenopathy alone in 20% of cases and thyroid swelling with lymph nodes in 13% of cases. Papillary carcinomas rarely spread by blood stream, commonly in the skull, spine and long bones. They can be pulsatile, especially the skull. X-ray shows destructive bony lesion.⁹ Diagnostic ultrasonography using B-mode gray scale provides remarkable anatomic information about the thyroid gland. Because of its simplicity and ability to distinguish between solid and cystic lesions, it is often the first modality to evaluate a thyroid mass in the euthyroid patient. Ultrasonography can detect lesions as small as 3 mm diameter, impalpable nodules and subtle multinodularity that is not clinically detectable. They may represent Psammoma bodies in papillary cancer. An elevated or rising thyroglobulin is highly specific and sensitive marker of recurrent follicular thyroid carcinoma.

In general, three surgical procedures are advocated-hemithyroidectomy, near-total thyroidectomy and total thyroidectomy.¹⁰ Total thyroidectomy is the treatment of choice for virtually all patients with papillary thyroid carcinoma when postoperative radioiodine therapy is being considered. Thyroid stimulating hormone stimulates thyroglobulin synthesis and secretion and increases radioactive iodine uptake in thyroid cancers. Hence, patients given an effective thyroxine hormone suppressive therapy <0.1 mu/mL have improved survival, lower recurrence rate and lower mortality. The follow-up of patients with differentiated thyroid carcinoma includes physical examination, monitoring of thyroglobulin level, I-131 whole body scanning, radiographic imaging and functional nuclear imaging. For medullary carcinoma, total thyroidectomy only offers the prospect of definitive cure both in primary and locally recurrent disease, irrespective of the tumour size. Anaplastic carcinoma is devastating and the treatment results are discouraging. The median survival of anaplastic thyroid cancer is 4-5 months.

CONCLUSION

Thyroid cancers are common in between 20-50 years age group and are more commonly seen in females. Most of the cancers are of papillary carcinoma type accounting up to 82% of cases. FNAC detects the majority of the cancers and is an important diagnostic test. Thyroid cancers have a good prognosis as most of the patients present as stage I disease.

Lymph nodal involvement is seen in about 20% of patients and most of the patients require total thyroidectomy with or without lymph node dissection followed by radioiodine ablation as treatment. Prognosis is good for differentiated thyroid cancers and medullary carcinoma, whereas anaplastic carcinoma behaves aggressively and has a poor prognosis.

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