

Study of Thyroid Cancer

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Objectives

1. To study the role of surgery in the comprehensive management of thyroid malignancies.
2. To study the result of surgical management of thyroid malignancy.

Abstract

Cancer of the thyroid gland represent a spectrum of different histological entities with diverse clinical behaviour. Generally there is a very slow progression from differentiated carcinoma to anaplastic carcinoma. This transition takes decades to take place in most instances. The present study on thyroid cancer is conducted in Shadan Hospital, Hyderabad , over a period of two and a half years on 24 inpatients diagnosed with thyroid cancer using various investigative modalities. The incidence was found to be 1.46% with higher incidence in female. Papillary cancer was most common type of cancer found. The common presentation was thyroid swelling and most of them were found in stage I period. Total thyroidectomy was most commonly done procedure. Transient hypoparathyroidism was the common complication seen after surgery.

Keywords: Papillary carcinoma, Lymphoma, Dysphagia , Thyroidectomy, Cervical lymphadenopathy, Chemotherapy, Hypoparathyroidism.

I. Introduction

Thyroid cancer[21] is a relatively rare neoplasm worldwide, accounting for approximately 1.5% of all cancers in females and less than 2% in males. Although the incidence of thyroid cancer is relatively rare, it is the most common endocrine malignancy worldwide. While the international incidence varies considerably, a fairly consistent female-to-male ratio of three-to-one observed in almost all geographic areas and ethnic group.

Cancer of the thyroid gland represents a spectrum of different histological entities[18] with diverse clinical behaviour[16][17]. Generally there is a very slow progression from differentiated carcinoma[5] to anaplastic carcinoma. However, this transition takes decades to take place in most instances. The clinical evaluation of thyroid nodule is a common problem confronting the clinicians. The vast majority of such nodules are benign, but such a thyroid swelling may harbor malignancy[8] and it demands prompt and accurate diagnosis. The natural history of thyroid carcinomas allows the surgeon to perform a more prolonged and thoughtful preoperative workup and evaluation [6].

Appropriate management [22] is essential to achieve the optimal therapeutic success. The fine needle aspiration cytology [23] is now the corner stone of investigation for many of these patients and evaluation and subsequent treatment usually involve assessment by a multidisciplinary team fully conversant in all aspects of thyroid cancer therapy. The clinical management of the well-differentiated thyroid carcinomas rests on retrospective studies and individual clinical experience. Finally, there is a great variability in the duration of follow up in these relatively slow growing lesions.

II. Methodology

The present study is conducted on the cases admitted as inpatient in Shadan Hospital, Hyderabad with signs and symptoms of carcinomas thyroid, who are clinically evaluated and confirmed by FNAC[19]. The study was done between September 2013 and November 2015 on 24 patients.

The patients confirmed by FNAC were subjected to surgery. The patients were followed up a month after surgery and further evaluated every 6 months until the completion of study and underwent thorough clinical examination, investigative procedures like chest X-ray, radioiodine scan for loco-regional recurrence or distant metastasis[1][7]. Exclusion criteria: Patients with benign thyroid disorder, less than 12 years of age, The study required certain investigations to be conducted on the patient viz. routine blood investigations, thyroid function tests when needed, X-ray chest and neck, fine needle aspiration and cytological diagnosis. Indirect laryngoscopy was done in all patients to determine the status of the vocal cords specifically their movements. The study also required certain intervention to be conducted on patients like biopsy for diagnosis as in case of lymphoma[11] or anaplastic carcinomas. All the investigations and interventions were done only after the proper consent from the patients.

III. Results And Discussion

Age incidence

Table 1: Age incidence in thyroid malignancies

Age(years)	Number of cases	Percentage
0 to 9	0	0
10 to 19	1	4.1
20 to 29	5	20.8
30 to 39	9	37.5
40 to 49	5	20.8
50 to 59	2	8.2
60 to 69	2	8.2
70 to 79	-	-
Total	24	100

Table 2: Age incidence in different thyroid malignancies

Age (year)	Papillary	follicular	Anaplastic	Medullar	Lymphoma
0 to 9	0	0	0	0	0
10 to 19	1	0	0	0	0
20 to 29	4	1	0	0	0
30 to 39	7	2	0	0	0
40 to 49	3	1	0	0	1
50 to 59	1	1	0	0	0
60 to 69	1	0	1	0	0
70 to 79	0	0	0	0	0
80 to 89	0	0	0	0	0
90 to 99	0	0	0	0	0

In this series, it was found that thyroid carcinoma is commonly seen in the age group of 30-39 and the common type of malignancy seen is the papillary thyroid carcinoma. The most commonest histological type (i.e. papillary carcinoma) is also common in fourth decade.

Sex incidence: 1. Number of female patients 19
2. Number of male patients 5

Table 3: sex incidence in relation to type of malignancy

Male to female ratio was 1:4 in the study.

Table 4: Clinical features of thyroid malignancy

Symptoms	Number of cases	Percentage
Thyroid swelling	16	66.6
Lymph nodal mass	2	8.3
Hoarseness of voice	2	8.3
Dysphagia	1	4.1
Dyspnoea	2	8.3
Symptoms of hyperthyroidism	0	0
Diarrhoea	0	0
Distant metastases	1	4.1

Duration of thyroid swelling

Of the 24 patients with thyroid cancer, 16 patients presented with thyroid swelling and most of the patients noticed the swelling in a period less than 3 months (31.2%). Seventy five percent of the patients presented with swelling of less than one year duration.

Table 5: Duration of thyroid swelling in thyroid malignancies

Duration	Number of Cases	Percentage
< 3 months	5	31.2
3 to 6 months	3	18.75
6 months to 1 year	4	25
1 to 3 years	2	12.5
3 to 5 years	1	6.25
5 to 10 years	1	6.25

Indirect Laryngoscopy

Indirect laryngoscopy done in the patients under study revealed vocal cord palsy in four of the patients. Three had papillary carcinomas and all of them underwent near-total thyroidectomy and the other was follicular variant of papillary carcinoma thyroid[9][20].

Radiological findings

Radiograph of the neck is made in the antero-posterior and the lateral views. The radiograph in 6 of the patients showed tracheal deviation and it showed calcifications in 3 of the patients. The rest of the patients showed normal radiograph of the neck.

Staging:

The patients were staged based on the AJCC 2010 staging system and the results are as follows.

Table 7: AJCC 2010 staging of thyroid malignancies

Staging	Number of cases	Percentage
Stage I	13	54.1
Stage II	4	16.6
Stage III	2	8.3
Stage IVA	4	16.6
Stage IVB	0	0
Stage IVC	1	4.1

Most of cases after investigations and pathological reporting were found to be stage I (54.1%) as most of patients in the study had differentiated thyroid carcinomas and most of them were below 45 years of age. Stage II and IVA were the next commonly seen stage of the disease and the patients constituted 16.6% each in the study.

Surgical Treatment

Table 8: Surgery for the primary disease

Surgery	number of cases	percentage
Total thyroidectomy	18	75
Hemithyroidectomy + Completion thyroidectomy	2	8.3
Near-total thyroidectomy	3	12.5
Isthmectomy	0	0
Hemithyroidectomy	1	4.1

The most commonly performed surgery in the study was total thyroidectomy. 18 patients (75%) underwent total thyroidectomy. Most of these patients were proven papillary carcinoma on cytology or suspicious of malignancy during surgical procedure. The patients 2 in number (8.3%), whose cytology turned out to be follicular neoplasm, and with a solitary nodule, initially underwent hemi-thyroidectomy, and later a completion thyroidectomy after the histopathological report. Three of the patients in the study (12.5%) had infiltration of the recurrent laryngeal nerve by the tumor[4] and these patients underwent a near-total thyroidectomy leaving minimal thyroid tissue adjoining the recurrent laryngeal nerve. One of the patients with follicular neoplasm underwent initially a hemi-thyroidectomy and their histological report was follicular carcinoma. However in view of their low-risk status and the associated poor medical condition the patient was advised follow-up.

Surgery for nodal secondaries

Three of the patients who presented with cervical lymphadenopathy underwent functional neck dissection for level II, III and IV group of cervical lymph nodes.

Lymph Node Involvement

Two patients with papillary carcinoma thyroid had lateral cervical group lymphadenopathy (level III and IV).

Risk categorization

Among the 24 patients in the study 22 patients had well differentiated carcinomas[3] of follicular cell origin. These patients were categorized into low and high risk groups based on the AMES categorization scheme[10].

Table 12: AMES categorization scheme for well-differentiated carcinomas

Type	Low-risk	High-risk
Papillary carcinoma	12(75%)	4(25%)
Follicular carcinoma	5(83.3%)	1(16.6%)
Total	17(77.2%)	5(22.7%)

When all patients with well-differentiated thyroid carcinomas were considered 77.2% of the patients were of the “low-risk” category and 22.7% were of the “high-risk” category. If patients with papillary thyroid carcinomas are alone considered 75% are of “low-risk” category. 83.3% and 16.6% of follicular carcinoma patients were of “low-risk” and “high-risk” categories.

Complications of Surgery

Complication	Number of cases	Percentage
Transient hypoparathyroidism	6	25
Recurrent laryngeal nerve palsy	1	4.1

All symptomatic hypocalcemic patients were treated with 10 ml of 10% calcium gluconate slow i.v. Less severe cases were treated with oral calcium supplements along with vitamin D. All the patients recovered in the immediate postoperative period. One patient suffered recurrent laryngeal nerve palsy postoperatively. None of the patients had wound infection. Among the patients who came for regular follow up none of the patients developed hypocalcemia on a long term.

Postoperative Advice

All the patients with differentiated thyroid carcinomas were referred to higher centers for radiolodine therapy and follow up[13]. One patient who had anaplastic carcinoma[12] was advised to undergo external beam radiotherapy. One patient who had lymphoma (NHL) was advised to undergo combined chemotherapy and external radiotherapy. All patients were started on thyroxine therapy postoperatively.

IV. Conclusion

1. The incidence of thyroid malignancy in the present study is 1.46% comparable to incidence in other parts of India.
2. The incidence of thyroid cancer is higher in females than in males.
3. The most common mode of clinical presentation was thyroid swelling .
4. The proportion of different histopathological types of thyroid cancer [14] [15]were similar to those reported in literature.
5. The extent of surgery, cytology and risk categorization were similar to those reported in literature.
6. The most common complication was transient hypoparathyroidism[2] which resolved with calcium supplementation.

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