

www.jmscr.igmpublication.org

Impact Factor 3.79
ISSN (e)-2347-176x



Journal Of Medical Science And Clinical Research

An Official Publication Of IGM Publication

Chaning Trends in the Incidence of Carcinoma Thyroid –A Clinico Pathological Correlation

Authors

Dr. K. Sailaja DNB¹, Dr. R. Mahalakshmi MS², Dr. D.M. Sasank³

¹Assistant Professor, Dept of General Surgery, Rangaraya Medical College, Kakinada, Andhrapradesh, India

²Professor, Dept. of General Surgery, Rangaraya Medical College, Kakinada, Andhrapradesh, India

³Junior Resident, Dept. of General Surgery, Rangaraya Medical College, Kakinada, Andhrapradesh India

Corresponding Author

Dr. K.Sailaja

D.No :1-9-23, Sriramnagar, Kakinada.533003. East Godavari District, Andhrapradesh, India

Email: sailaja7074@gmail.com

ABSTRACT

BACKGROUND

Thyroid tumours are the most common endocrine neoplasms. ⁽¹⁾ 5-10% of all clinically presenting thyroid nodules are carcinomas. Thyroid malignancies are divided into-Well-differentiated Carcinomas of which papillary carcinomas (80%), follicular carcinomas (10%), modularly thyroid carcinomas (5-10%) are the most common types, and Undifferentiated anaplastic carcinomas are less (1-2%). Primary thyroid lymphomas and primary thyroid sarcomas are rare. The recent rise in incidence of thyroid swellings is also recorded in India ⁽²⁾ and may be traced to the increased patient awareness and also due to increased specificity of the investigations ⁽⁸⁾.The availability

of trained pathologist in the interpretation of the cytology picture has contributed to a sensitivity of the diagnosis especially for malignancies of thyroid gland ⁽¹¹⁾.

METHODS

A prospective study was conducted at Government General Hospital, Kakinada. The study period is from August 2011 to August 2014.The Study sample constituted 112 patients. Inclusion criteria – all patients admitted and diagnosed to be carcinoma thyroid by HPE irrespective of co - morbidities. Exclusion criteria -patients who had positive cytology for carcinoma but HPE proved no carcinoma i.e, false positives,

(30 cases).and Patients who absconded from treatment and follow – up.

RESULTS

There is an increase in the incidence of Carcinoma thyroid cases by about 0.6%.

There is a shift in Age distribution to a younger age in our study to 37yrs. Malignant neck node presentation has been observed in 5.35% of patients.

KEY WORDS

Age and sex incidence, FNAC picture, Management strategies and follow-up, Radio-iodine treatment, Thyroglobulin assay, Well-differentiated Thyroid carcinoma.

DISCUSSION

Thyroid carcinoma most commonly presents as a painless, palpable, solitary thyroid nodule. ⁽⁹⁾The clinical presentation usually presents as a solitary nodule in either of the lobes ⁽¹⁰⁾. Any recent rapid increase in size, hard or fixed mass is a suspicious ⁽¹³⁾. A lateral neck swelling as a cervical lymph node metastasis may occasionally be the only clinical presentation. Onset of pressure symptoms like hoarseness of voice or dysphagia may suggest malignant infiltration to involve Recurrent Laryngeal Nerve or esophagus. This is especially important to be identified in longstanding swellings of thyroid with endemic or multinodular goitre.

A thorough clinical examination, assessment of thyroid function by Thyroid function tests will give a preliminary idea of the possible pathology. Ultrasound study of neck performed by 6Hz

probe gives an idea about the site, size, cystic or solid consistency of the nodule ⁽¹⁴⁾ and can give a complete assessment of even the non-palpable thyroid gland and the possible presence of lymph node enlargement. Presence of a hard nodule or a lateral neck node is to be followed up by Contrast enhanced Computed tomography of Neck for a better evaluation ⁽¹⁵⁾.

Fine Needle Aspiration Cytology is the main stay of pathological assessment. It has a limitation of inability to differentiate between follicular adenoma or Carcinoma. Apart from this FNAC is 75% specific and 96% sensitive for the diagnosis of Well Differentiated Carcinoma of Thyroid Gland. There has been a standardisation of FNAC picture by adoption of BETHESDA SYSTEM in 2009 ⁽¹⁶⁾.

This system classifies the thyroid malignancies basing on the number of cells per High power field with features suggestive of Malignancy.

There are 6 types as follows:

Thy 1 – Non diagnostic / unequivocal

Thy 2 – Benign

Thy 3 – Atypia / follicular lesion of undetermined significance

Thy 4 – Follicular neoplasm / suspicious Follicular Neoplasm

Thy 5 – Suspicious malignancy

Thy 6 – Malignancy.

After investigations Patient is treated by Total thyroidectomy and central neck node dissection for all high risk Papillary Carcinomas, and medullary carcinomas⁽¹⁷⁾. Follicular neoplasm is dealt by hemithyroidectomy and is followed up with completion thyroidectomy if the histopathology report proves invasive carcinoma.

Anaplastic carcinoma is managed by radioiodine ablative therapy and isthmusectomy with tracheostomy is done only in acute respiratory obstruction with stridor. Estimation of thyroglobulin as a tumor marker and as a baseline serum marker is important to know the prognosis and also to choose the radioiodine dose for postoperative follow up⁽¹⁸⁾.

PRESENT STUDY

A prospective study was taken up in the time period august 2011 to august 2014 and a study population of 112 patients were included in the study. The protocol was approved by the local ethics committee and written informed consent was obtained from each patient.

STATISTICS

Total thyroid carcinomas admitted in GGH – 112

Incidence of thyroid carcinoma – 1.44%.

Age incidence – 30-50yrs (50%), mean age group: 37.5 yrs.

Sex incidence: Female preponderance has been observed. (5:1)

Clinical Presentation:

- a) Thyroid Swelling – Palpable neck mass – 92.8%, solitary nodule 37, Multi nodular goitre ,55.

Thyromegaly with lymph node - 23 cases (20.5%)

Isolated neck mass ie, Lymph node – 6 cases(5.35%)

- b) Size of thyroid swelling - < 4cm –38%, > 4cms – 33% (right >left)

c) Duration of swelling – 3-6mth-1yr {mean duration – 9.9mths }

d) Symptomatology—

Dysphagia – 5%,

Dyspnoea – 3.5%,

Toxic symptoms – 0.8%,

Hoarseness of voice –2.6%

Table 1.Clinical Staging:

Stage 1 –	(7 ptc + 5 ftc)=12=10.7%
Stage 2 –	(8 ptc + 2 ftc)=10=8.9%
Stage 3 –	(3 ptc + 2 ftc)=5=4.4%
Stage 4A –	(15 PTC + 1 ftc)=16=14.2%
Stage 4B –	(PTC)=1=0.8%
Stage 4C –	(metastatic – FTC)=1=0.8%
Recurrent carcinoma(neck nodes) – Tx –	1.7%

e) Investigations: IDL – 1.8% unilateral palsy, x ray neck – tracheal deviations : 28.5%, soft tissue Calcifications -12.7%

f) Ultra sound Neck –

Multinodular goitre- 57% (64 cases),

Lymph nodes-30% (33 cases)

Calcified mass-17% (19 cases)

g) Histological Sub-variants in Papillary Carcinoma: were:

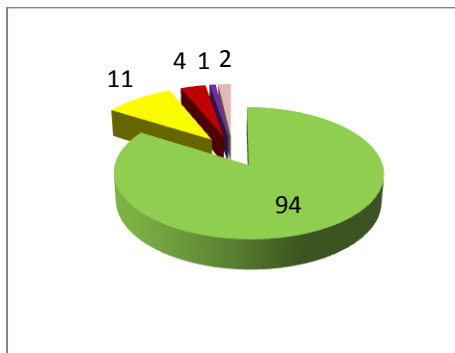
Classical, Hurthle cell, Insular types.

(Tall cell, columnar and diffuse sclerosing variants were not registered in our institute.)

Figure:1

Incidence of various Histopathological Types of Well-Differentiated Carcinoma:

Papillary type were 94, Follicular type were 11, Medullary carcinoma- 4 cases and 1 Anaplastic variety.



PTC-94
FTC-11
MTC-4
ATC-1

Table: 2 Incidence of Sub –Types of Papillary Ca. Thyroid

HPE	FREQUENCY	PERCENTAGE
CLASSICAL PTC	65	58%
FOLLICULAR VARIANT	16	14.2%
PAPILLARY MICROCARCINOMA	9	8%
ENCAPSULATED VARIANT	2	1.4%
TRABECULAR VARAIANT	1	0.8%
HISTIOCYTIC VARIANT	1	0.8%

TABLE 3 Incidence of Sub-Types of Follicular and Other Carcinomas

HPE	FREQUENCY	PERCENTAGE
CLASSICAL FTC	8	7%
HURTHLE CELL VARIANT	1	0.8%
INSULAR CARCINOMA	1	0.8%
FTC MINIMALLY INVASIVE	1	0.8%
MTC	4	3.5%
ATC	1	0.8%
RECURRENT CARCINOMA (TX) Level v nodes	2	1.7%

Table: 4 Management of Carcinoma Thyroid in Present Study

SURGERY	FRE Q UENCY	PERCENTAGE
TOTAL THYROIDECTOMY	47	41.5%
Hemi Thyroidectomy & SubTotal Thyroidectomy , later done COMPLETION THYROIDECTOMY	30	26.7%
TT + Functional Neck Dissection	9	8.03%
TT+ Central Node Dissn.+ FND	8	7.1%

TT + CND	6	5.35%
NTT	4	3.5%
TT+ BILATERAL FND	3	2.6%
TT + Modified Radical Neck Dissn. II	3	2.6%

PROGNOSIS

Prognosis stratification was adapted by Thyroglobulin estimation rather than the difficult AGES, AMES and MACIS scoring which are operator and pathologist opinion based.

A cut off Tg level >1.3 ng/ml represents a simple indication for further investigations after total thyroidectomy in the absence of anti TG antibody measurement.

(Gr I – low risk - <1.3 ng/ml - suppressive T3/ low dose RAI therapy

Gr II - high risk - >1.3 ng/ml - high dose RAI therapy)

There is a significant correlation between Gr II and residual disease or recurrence.

All patients were sent Thyroglobulin estimation on first week of postoperative period and follow up estimation done after 6 weeks post-operatively.

Table-5: PROGNOSIS By Estimation of Thyroglobulin assay:

Gr I – low risk - <1.3 ng/ml - suppressive T3/ low dose RAI therapy

Gr II - high risk - >1.3 ng/ml - high dose RAI therapy

Very low risk –37.6%	<1.3ng/ml in Stage 1&2		Kept on suppressive Eltroxine .—100mcg/day
Low risk – 41.3%	>1.3ng/ml	Stage 3,4 Low dose RAI ablation.	
High risk – 15.5%	Anaplastic Ca.,Cervical LN Metastasis.		High dose RAI ablation.

Comparison With Other Studies:

Table-6- Incidence

In ICMR (NCRP) 2009 it was 0.8% ,in SEER group(USA)2010 it was 1.4 -2.22%

in our study it is 1.44% of all malignancies.

NCRP (SEER)2010 sex ratio was M:F= 1:2 ,in our study it is 1:5

Clinical Staging

In NCRP-SEER 2010: Stage 1-68%,Regional metastasis-25%,Distant metastasis-4%,

In our study the statistics showed Stage:1 78.5%,Regional Metastasis:16.9%, Distant Metastasis:2.6%.

Table 7: Comparison of incidence of Carcinomas with other studies:

Type of Malignancy	NCRP(2009)	SEER(2009)	Present study
PTC	53.2%	85%	61.6%
FTC	18.8%	9%	11.6%
MTC	4.3%	1.4%	3.5%
ATC	3.3%	1.6%	0.8%

Table: 8- FNAC and Biopsy correlation:

Sensitivity in our study is 75%,Specificity-88%,Positive predictive value is 73.68%

FNAC	NCRP (Mumbai cancer registry) 2010	Jan f Silverman et al,,,2009	Present study
SENSITIVITY	95%	93%	75%
SPECIFICITY	86%	96.5%	88%
Positive Predictive Value	79%	88.9%	73.68%
NPV	92%	96.5%	88.7%

Table: 9: Surgeries Performed were :

SURGERY	GUILL EAMONDIGUE ET AL (2009)	PRESENT STUDY
TOTAL THYROIDECTOMY	57%	67%
COMPLETION THYROIDECTOMY (HT+STT)	24%	26.7%
NECK DISSECTIONS	18%	25.8%

CONCLUSIONS

Change in incidence: INCREASED by 0.6%.
 Shift in age distribution: 37yrs. {50yrs in seer 2006 – 2010}
 Isolated positive neck node presentation: 5.35% {20.5% in previous statistics.}
 Newer HP variants reported during present study:
 - Micro PTC
 - Increased

- Histiocytic -oncocytic PTC - 1

- Trabecular variant - 1
 - Insular variant FTC - 1

PROPOSALS

- Early diagnosis should include thorough clinical and ultrasound examination of neck.
- Patients with new nodule or change in size of previous nodule should have Medical consultation at the earliest possible.

- Ultra Sound guided FNAC of thyroid is preferable to avoid false negatives.
- BETHESDA SYSTEM is to be followed to categorise thyroid malignancies.
- Meticulous technique in the performance of total thyroidectomy and neck dissections is to be followed.
- Risk stratification in immediate post operative period by Tg estimation and RAI uptake is mandatory.
- Regional lab facilities and radiotherapy units attached to teaching hospitals is the need of the hour.
- Multidisciplinary team is important for the changing scenario for achieving best results for the patients. It should ideally consist of Surgeon, Endocrinologist, Pathologist, Radiologist and Radiation oncologist with nuclear medicine training.

REFERENCES

1. Burden of Thyroid Diseases in India. Need for Aggressive Diagnosis Mathew John
2. Copyright © 2012 Surgical Associates Ltd. Published by Elsevier Ltd. PMID: 2312-8246 [PubMed-indexed for MEDLINE]
3. Journal of Cancer Epidemiology Volume 2013 (2013), Article ID 965212, 10 pages <http://dx.doi.org/10.1155/2013/965212> Review Article
4. M. P. Curado, B. Edwards, H. R. Shin et al., Cancer Incidence in Five Continents, vol. 9 of IARC Scientific Publications, No. 160, IARC, Lyon, France, 2007.
5. B. A. Kilfoy, T. Zheng, T. R. Holford et al., "International patterns and trends in

thyroid cancer incidence, 1973–2002," Cancer Causes and Control, vol. 20, no. 5, pp. 525–531, 2009. View at Publisher · View at Google Scholar · View at Scopus

6. A. Jemal, R. Siegel, J. Xu, and E. Ward, "Cancer statistics, 2010," CA: A Cancer Journal for Clinicians, vol. 60, no. 5, pp. 277–300, 2010. View at Publisher · View at Google Scholar · View at Scopus
7. B. Aschebrook-Kilfoy, E. L. Kaplan, B. C. Chiu, P. Angelos, and R. H. Grogan, "The acceleration in papillary thyroid cancer incidence rates is similar among racial and ethnic groups in the United States," Annals of Surgical Oncology, 2013. View at Publisher · View at Google Scholar
8. L. Enewold, K. Zhu, E. Ron et al., "Rising thyroid cancer incidence in the United States by demographic and tumor characteristics, 1980–2005," Cancer Epidemiology Biomarkers and Prevention, vol. 18, no. 3, pp. 784–791, 2009. View at Publisher · View at Google Scholar · View at Scopus
9. W. D. T. Kent, S. F. Hall, P. A. Isotalo, R. L. Houlden, R. L. George, and P. A. Groome, "Increased incidence of differentiated thyroid carcinoma and detection of subclinical disease," Canadian Medical Association Journal, vol. 177, no. 11, pp. 1357–1361, 2007. View at Publisher · View at Google Scholar · View at Scopus
10. L. Davies and H. G. Welch, "Increasing incidence of thyroid cancer in the United

- States, 1973–2002,” *Journal of the American Medical Association*, vol. 295, no. 18, pp. 2164–2167, 2006. View at Publisher · View at Google Scholar · View at Scopus
11. S. Grodski, T. Brown, S. Sidhu et al., “Increasing incidence of thyroid cancer is due to increased pathologic detection,” *Surgery*, vol. 144, no. 6, pp. 1038–1043, 2008. View at Publisher · View at Google Scholar · View at Scopus.
12. A. Rego-Iraeta, L. F. Pérez-Méndez, B. Mantinan, and R. V. Garcia-Mayor, “Time trends for thyroid cancer in northwestern Spain: true rise in the incidence of micro and larger forms of papillary thyroid carcinoma,” *Thyroid*, vol. 19, no. 4, pp. 333–340, 2009. View at Publisher · View at Google Scholar · View at Scopus
13. A. Y. Chen, A. Jemal, and E. M. Ward, “Increasing incidence of differentiated thyroid cancer in the United States, 1988–2005,” *Cancer*, vol. 115, no. 16, pp. 3801–3807, 2009. View at Publisher · View at Google Scholar · View at Scopus
14. Role of thyroid ultrasound in the diagnostic evaluation of thyroid nodules. Rago T1, Vitti P.
15. Ultrasound of thyroid nodules. Desser TS1, Kamaya A. *Neuroimaging Clin N Am*. 2008 Aug;18(3):463-78, vii. doi: 10.1016/j.nic.2008.03.005
16. The Bethesda System for Reporting Thyroid Cytopathology Edmund S. Cibas, MD,1 and Syed Z. Ali, MD2
17. M. Schlumberger, I. Borget, C. Nascimento, M. Brassard, and S. Leboulleux, “Treatment and follow-up of low-risk patients with thyroid cancer,” *Nature Reviews Endocrinology*, vol. 7, no. 10, pp. 625–628, 2011. View at Publisher · View at Google Scholar
18. Y. Ito and A. Miyauchi, “Is surgery necessary for papillary thyroid microcarcinomas?” *Nature Reviews Endocrinology*, vol. 8, no. 1, p. 9, 2012.
19. E. K. Alexander and P. R. Larsen, “Radioiodine for thyroid cancer—is less more?” *The New England Journal of Medicine*, vol. 366, no. 18, pp. 1732–1733, 2012. View at Publisher · View at Google Scholar.