ORIGINAL RESEARCH PAPER
Volume-8 | Issue-9 | September - 2019 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ROLE OF KI67 AS A PROLIFERATIVE MARKER IN LESIONS OF THYROID

Pathology

Dr. Prajakta patil Ex resident, Pathology Department, GMC Aurangabad

Dr. Vijay.Mulay* Associate professor, Pathology Department, GMC Aurangabad *Corresponding Author

Dr. Anuprita Kulkarni JR-III, Pathology Department, GMC Aurangabad

Dr. Anil Joshi Professor and Head, Pathology Department, GMC, Aurangabad

ABSTRACT

INTRODUCTION : This study was conducted to assess utility of Ki67 as proliferation marker in thyroid lesions and for usefulness of Ki-67 in distinguishing benign and malignant thyroid lesions.

MATERIALS AND METHODS: In present study 50 cases of non- and neoplastic thyroid lesions were included. Histopathological diagnosis achieved on gross and microscopy of h&e stained slides followed by Ki-67.

RESULTS: In present study Ki67 labeling index were counted. Range of Ki67 LI for multinodular goiter is 0.1 to 0.9 and mean 0.29. For Hashimoto thyroiditis range was 0.3 to 0.6 & mean 0.42. In follicular adenoma range was 0.6 to 1.4 and mean 0.9. Range of Ki67 LI for Papillary carcinoma was 2.6 to 4.9 and mean 3.7. For Follicular carcinoma range was 4.6 to 9.1 & mean 6.6. Ki67 LI was much higher in Anaplastic carcinoma i.e 35.

CONCLUSION: There was statistically significant difference in benign and malignant thyroid lesions.

KEYWORDS

INTRODUCTION:

Thyroid nodules are commonly encountered during routine medical care. The prevalence of thyroid nodule increases with age, average 4-7% in adult population but it is much higher (19-67%) when subclinical nodules are also considered. Thyroid cancer represents 5-24% of all these nodules.[1] Thyroid cancer is the most common malignancy in endocrine organs.[2] Thyroid neoplasms, papillary and follicular carcinomas, are heterogenous group of tumors and accounts for about 1% of all malignancies.[3] useful in establishing the diagnosis.

The present study was conducted to assess the utility of Ki67 as a proliferation marker in nonneoplastic and neoplastic lesions of thyroid as well as to evaluate the usefulness of Ki-67 in distinguishing benign and malignant lesions of thyroid. Prior studies evaluating the role of Ki67 in the thyroid have produced variable results. However there are very few such literature from India.

AIMS AND OBJECTIVES

1. To study the role of Ki67 as a proliferative marker in thyroid lesions.
2. To study utility of Ki67 to establish diagnosis by differentiating benign and malignant thyroid lesions.

3.MATERIALS AND METHODS

This study titled as "Role of Ki67 as a proliferative marker in lesions of thyroid" was carried out in the institute during the period from October 2014 to October 2016.

In present study total 50 cases diagnosed as non-neoplastic (multinodular goiter, hashimotos thyroiditis) and neoplastic (follicular adenoma, papillary carcinoma, follicular carcinoma, anaplastic carcinoma) thyroid lesions were included. Total thyroidectomy and lobectomy specimens received were included in this study. Ki-67 was put on histopathological sections. The data was entered into excel sheet and statistical analysis of the data was performed using ANOVA (analysis of overall variance) test. *P* value of less than 0.05 was considered statistically significant.

RESULT

During the period from October 2014 to October 2016 , a total 50 cases were collected. It includes 25 non neoplastic and 25 neoplastic thyroid lesions. Out of this there were 21 cases (42%) of multinodular goitre , 4 cases (8%) of Hashimoto thyroiditis and 8 cases (16%) of follicular adenoma, 13 cases (26%) of papillary carcinoma, 3 cases (6%) of follicular carcinoma, one case (2%) of anaplastic carcinoma.

Table No.1: Case Distribution

Sr No.	Histological subtypes	No. of Cases	Percentage(%)
1.	Multinodular goiter	21	42%
2.	Hashimoto Thyroiditis	4	8%
3.	Follicular Adenoma	8	16%
4.	Papillary Carcinoma	13	26%
5.	Follicular Carcinoma	3	6%
6.	Anaplastic Carcinoma	1	2%
7	**Total**	**50**	**100**

In present study , out of 50 , 41 cases (82%) were female patient and 9 cases (18%) were male patient. F:M ratio was 8.2:1 . Thus, the frequency of thyroid lesions was more in females

Table No.2: Sex Distribution of Cases

SR NO	SEX	NO OF CASES	PERCENTAGE
1	MALE	9	18%
2	FEMALE	41	82%

Almost all patients presented with swelling infront of neck (100%), 10 patients presented cervical lymphadenopathy (20%) and other complaints were weight gain(4%), dysphagia (4%), dyspnea (4%).

Table No.5: Clinical complaints at first presentation of the pateints

Sr. No.	Clinical Symptoms	No. of Cases	Percentage (%)
1.	Swelling infront of neck	50	100%
2.	Weight gain	2	4%
3.	Cervical lymphadenopathy	10	20%
4.	Dysphagia	2	4%
5.	Dyspnea	2	4%

In present study Ki67 labeling index (LI -expressed as percentage of positively stained cells per 100 follicular epithelial cell) in each case were counted. Range of Ki67 LI for multinodular goiter is 0.1 to 0.9 and its mean was 0.29. For Hashimoto thyroiditis range was 0.3 to 0.6 & mean 0.42. In follicular adenoma range calculated was 0.6 to 1.4 and mean 0.9.

Table No. 8. Mean value and Range of Ki67 Labeling index (LI) in Benign thyroid lesions

Sr. No.	Histopathological subtype	No. of cases	Mean of Ki67 LI	Range of Ki67 LI
1.	Multinodular goiter	21	0.29	0.1- 0.9
2.	Hashimoto thyroiditis	4	0.42	0.3 -0.6
3.	Follicular adenoma	8	0.9	0.6 -1.4

In this study, range of Ki67 LI for Papillary carcinoma was 2.6 to 4.9 and its mean was 3.7. For Follicular carcinoma range was 4.6 to 9.1 & mean 6.6. Ki67 LI was much higher in Anaplastic carcinoma i.e 35.

Table No. 9. Mean value and Range of Ki67 Labeling index in Malignant thyroid lesions :

Sr. No.	Histological subtype	No. of cases	Mean of Ki67 LI	Range of Ki67 LI
1.	Papillary carcinoma	13	3.7	2.6 -4.8
2.	Follicular carcinoma	3	6.6	4.6-9.1
3.	Anaplastic carcinoma	1	35	0-35

When comparison of mean value of Ki67 in all lesions of thyroid we observed that it was in increasing order from multinodular goiter(0.29) to Hashimoto thyroiditis(0.4) to follicular adenoma(0.9) to papillary carcinoma(3.7) to follicular carcinoma(6.6) to anaplastic carcinoma(35).

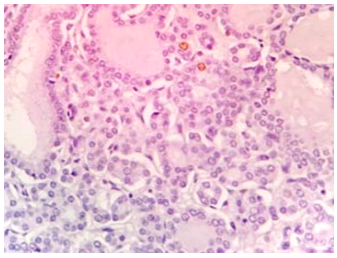
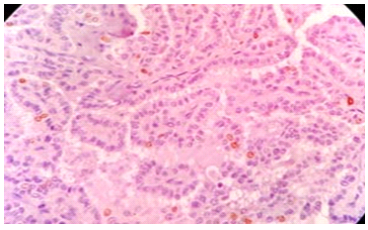


Fig. 1 Follicular Adenoma Ki67 Immuno Stain. 400 x



A Fig. 2 . Papillary Carcinoma Ki67 immunostain 400x

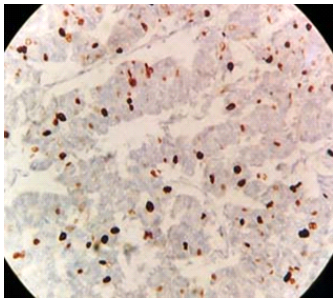


Fig. 3 . Follicular Carcinoma Ki67 immuno stain 400x Ki67LI-9.1

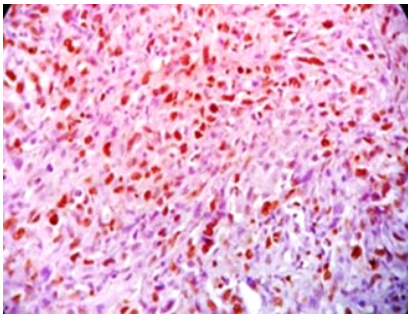


Fig- 4. Anaplastic Carcinoma Ki67 immuno stain 400 x Ki67 LI-35

In present study, age of patients with benign thyroid lesion ranged from 20-66 yrs but maximum cases occurred in 21-50 yrs . Age range for malignant thyroid lesion is 12-70 yrs but maximum cases occurred in 31-60yrs. In study of 100 cases **Punjani et al (2010)** age range for overall cases of thyroid lesion was 17-80 yrs. Age range according to **Bashandy et al (2012)** was 12 to 68 yrs. A similar study done by **Chaudhary et al (2011)** included 50 cases of thyroid lesion. The age range was between 15-40 years. Thus, in our study the age was comparable to all other studies.

In present study ,size of nodule ranges from 1 to 7.5 cm. Similarly in study conducted by **Bashandy et al (2012)**[5] size ranged from 0.5 to 8cm diameter**.** In study done by **Chaudhary et al (2011)**[1] size of nodules were 2 to 5cm diameter**.**

In present study Ki67 labeling index in each case was counted. Range of Ki67 LI for multinodular goiter was 0.1 to 0.9 and its mean was 0.29. For Hashimoto thyroiditis range was 0.3 to 0.6 & mean 0.42. In follicular adenoma range calculated was 0.6 to 1.4 and mean was 0.9. In this study, range of Ki67 LI for Papillary carcinoma was 2.6 to 4.8 and its mean was 3.7. For follicular carcinoma range was 4.6 to 9.1 & mean 6.6. Ki67 LI was much higher in anaplastic carcinoma i.e. 35.

Table No.13: Comparison of Mean value of Ki67 Labeling index of Malignant thyroid lesions in various studies

Sr. no	Various studies	Papillary carcinoma	Follicular carcinoma	Anaplastic carcinoma
1	**Sofiadis (2009)**	2.9	3.5	42.6
2	**Punjani (2010)**	3.66	6	9
3	**Chaudhary(2011)**	5.65	9.20	0.2
4	**Present (2016)**	3.7	6.6	35

CONCLUSION-

.Age of patients with benign thyroid lesion ranged from 20-66 yrs but maximum cases occur in 21-50 yrs . Age range of patients for malignant thyroid lesion was 12-70 yrs but maximum cases occur in 31-60 yrs. In present study , F:M ratio was 4.5:1 . Thus, the frequency of thyroid lesion was more in females. Size of nodule of any thyroid lesion varies from 1 to 7.5 cm. Most common clinical presentation was swelling infront of neck in almost all patient (100%). Range of Ki67 labeling index of overall benign thyroid lesions 0.1 to 1.4 and mean was 0.41Range of Ki67 labeling index of overall malignant thyroid lesions 2.6 to 35 and mean was 6.0. There was statistically significant difference in benign thyroid lesions and malignant thyroid lesions.

REFERENCES

1. Ramaiah R.,Das D.,Bhananker SM, Joffe A.M. Extraglottic airway devices : A review. Int J of Critical illness and Injury science, Jan- March 2014; 4(1):77-87
2. Russo Sebastian G, Cremer Stephan, Galli Tamara, Eich Christoph, Bräuer Anselm, Crozier Thomas A, Bauer Martin andStrack Micha. Randomized comparison of the I-gel, the LMASupreme, and the Laryngeal Tube Suction-D using clinical and fiberoptic assessments inelective patients, BMC Anesthesiology 2012, 12(18) :2-9.
3. Drage MP, Nunez J, Vaughan RS, Asai T. Jaw thrusting as a clinical test to assess the adequate depth of anaesthesia for insertion of the laryngeal mask. Anaesthesia, 1997;51 (12): 1167-70
4. A. A. Dahaba, N. Prax, W. Gaube, M. Gries, P. H. Rehak and H. Metzler, Haemodynamic and catecholamine stress responses to the Laryngeal Tube-Suction Airway and the Proseal Laryngeal Mask Airway Anaesthesia, April 2006, 61(4): 330–334
5. Richez B, Saltel L, Banchereau F, Torrielli R, Cros AM. A new single use supraglottic airway device with a noninflatable cuff and an esophageal vent: an observational study of the i-gel. Anesth Analg 2008; vol 106:1137-9.
6. Beleña JM , Núñez M , Gracia JL , Pérez JL & Yuste J. The Laryngeal Mask Airway Supreme: safety and efficacy during gynaecological laparoscopic surgery. South African journal of Anesthesia and Analgesia, 2012; 18(3): 143-147
7. Cook T. M., Gatward J. J., Handel J., Hardy R., Thompson C., Srivastava R and Clarke P. A. Evaluation of the LMA Supreme in 100 non-paralysed patients. Anesthesia, May 2009; 64 (5) :555-62.
8. Henlin Tomas, Sotak Michal, Kovaricek Petr, Tyll Tomas, Balcarek Lukas, and Michalek Pavel. Comparison of Five 2nd-Generation Supraglottic Airway Devices for Airway Management Performed by Novice Military Operators, BioMed Research International Volume 2015, Article ID 201898, 8 pages.
9. Vikas Gupta, Nandita Mehta, Sunana Gupta, KulbhushanMahotra , Comparative evaluation of supraglottic airway devices I-gel and Supreme LMA in patients undergoing surgery under general anesthesia. Indian Journal of Clinical Anaesthesia, April - June 2015;2(2):86-91
10. Teoh W. H. L., Lee K. M., Suhitharan T., Yahaya Z., Teo M. M. , Sia A. T. H. Comparison of the LMA Supreme vs the i-gel in paralysed patients undergoing gynaecological laparoscopic surgery with controlled ventilation. Anaesthesia, 2010, volume 65, 1173–1179