



Published by DiscoverSys

Characteristic of thyroid carcinoma based on age, sex and histology type at Sanglah General Hospital, Bali, Indonesia, 2016



CrossMark

Kishan Arrumugam^{1*}, Ni Putu Ekawati², I Made Gotra²

ABSTRACT

Background: Thyroid cancer is one of the most common malignancies in the endocrine system whereas the annual mortality rate is increasing each year in Indonesia. This study aims to determine characteristic of thyroid carcinoma based on age, sex, and histology type at Sanglah General Hospital, Bali, Indonesia, 2016.

Methods: A cross-sectional study was carried out among 84 patients with thyroid carcinoma at Sanglah General Hospital during January–December 2016. Data were analyzed using secondary data from medical record based on age, sex, and histology type by SPSS

ver. 16.

Results: The highest prevalence of thyroid carcinoma based on age was found in the 50–54 years group (17.86%). Females were predominant that attributed to 73.8% compared with males (26.2%). In addition, papillary thyroid carcinoma has the highest prevalence in both sexes that is 75% among other types.

Conclusion: A 50–54 years-age group, females, and papillary thyroid carcinoma types were predominant at Sanglah General Hospital in 2016.

Keywords: Thyroid carcinoma, Age, Sex, Histology type

Cite This Article: Arrumugam, K., Ekawati, N.P., Gotra, I.M. 2018. Characteristic of thyroid carcinoma based on age, sex and histology type at Sanglah General Hospital, Bali, Indonesia, 2016. *Intisari Sains Medis* 9 (3): 124–126. DOI: [10.1556/ism.v9i3.285](https://doi.org/10.1556/ism.v9i3.285)

INTRODUCTION

Thyroid is an organ located anteriorly to the trachea at level of second and third tracheal ring. It has two lobes that are connected to isthmus in the midline. Each lobe is 2 centimeters wide, 3–4 centimeter long and few millimeters thick.¹ Thyroid has an important function in secreting hormone to regulate body temperature, heart rate, blood pressure and basal metabolic rate (BMR).² Posteriorly arising nodules are generally missed in diagnosis due to the adjacent anatomical relationship to rounded trachea which makes it challenging to be palpated during a physical examination.¹

Thyroid cancer is the most common malignancy of the endocrine system in which represents about 3.8% of all cases in the United States.² The annual mortality rate of 100,000 people in Indonesia due to thyroid cancer has increased by 36.4% since 1990. Thyroid cancer is more common in women than in men.³ The peak incidence of thyroid cancer diagnosed in men is 65 years to 69 years while for women is 45 years to 49 years.⁴ Thyroid cancer is found to be rare in childhood.⁵ Thyroid cancer is unique among cancers, in fact, thyroid cells are unique among all cells of the human body. They are the only cells that able to absorb Iodine. Iodine is required for thyroid cells to produce thyroid hormone, so they absorb it from the bloodstream

and concentrate it inside the cell.

Most thyroid cancer cells retain their ability to absorb and concentrate iodine. This provides a perfect “chemotherapy” strategy. Radioactive Iodine is given to the patient and the remaining thyroid cells (and any thyroid cancer cells retaining this ability) will absorb and concentrate it.⁵ Since all other cells of our bodies cannot absorb the toxic iodine, they are unharmed. The thyroid cancer cells, however, will concentrate the iodine and the radioactivity destroys the cell from within with minimal side effects. Not all patients with thyroid cancer need radioactive iodine treatments after their surgery.^{4,5} Others, however, should have it if a cure is to be expected. Which patients need it and which do not is a bit more detailed. Patients with medullary cancer of thyroid usually do not need iodine therapy because medullary carcinomas almost never absorb the radioactive iodine. Some small papillary carcinomas treated with a total thyroidectomy may not need iodine therapy as well, because these cancers are often cured with simple (complete) surgical therapy alone.^{6–8} Ultimately, the decision to use radioactive iodine therapy varies from patient to patient and from cancer to cancer.^{3,9} So far the primary data regarding thyroid carcinoma is not available. Data is fundamental in determining the characteristic of thyroid carcinoma trend in

¹Undergraduate Student of Faculty of Medicine, Udayana University, Bali, Indonesia

²Department of Anatomical Pathology, Faculty of Medicine, Udayana University, Sanglah General Hospital, Bali, Indonesia

* Correspondence to:
Kishan Arrumugam;
Undergraduate Student of Faculty of Medicine, Udayana University, Bali, Indonesia;
kishan_arrumugam@yahoo.com

Received: 2018-06-20
Accepted: 2018-07-22
Published: 2018-12-01

Indonesia. Thus, this study aims to determine the characteristic of thyroid carcinoma based on age, sex, and histology type at Sanglah General Hospital, Bali, Indonesia in 2016.

METHODS

A cross-sectional study was carried out among 84 patients with thyroid carcinoma at Sanglah General Hospital during January-December 2016. Secondary data with purposive sampling technique were used in this study by using medical records from the Anatomical Pathology department. The inclusion criteria are all patients registered in the medical record at Sanglah General Hospital during January-December 2016 period based on WHO classification for histology type of thyroid carcinoma. The samples are explicitly chosen for the attributed factors such as age group, sex and histology type.

Age was classified into several groups as follows: 0-4 years until 65-69 years old (5 years interval). Sex information was obtained from the medical record include female and male. And the histology types of thyroid carcinoma are based on WHO classification (2004) such as: papillary carcinoma, follicular carcinoma, poorly differentiated carcinoma, undifferentiated (anaplastic) carcinoma, squamous cell carcinoma, mucoepidermoid carcinoma, sclerosing mucoepidermoid carcinoma with eosinophilia, mucinous carcinoma, medullary thyroid carcinoma, mixed medullary and follicular cell carcinoma, spindle cell tumor with thymus-like differentiation (SETTLE), and carcinoma showing thymus-like differentiation (CASTLE). Data were analyzed descriptively using the Statistical Package of Social Service (SPSS) ver. 16 in percentage.

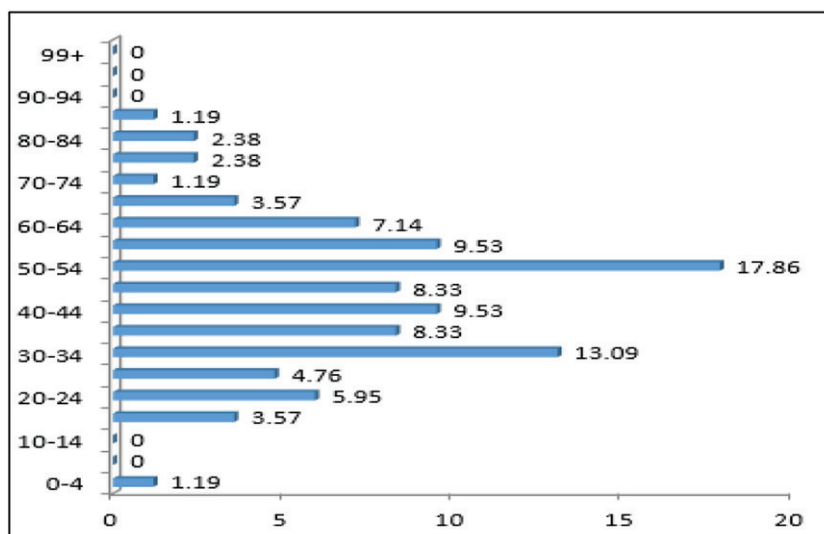


Figure 1. The prevalence of thyroid carcinoma based on age

RESULT

There were 84 eligible participants enrolled in this study from January-December 2016 at Sanglah General Hospital. Based on age group, thyroid carcinoma was most prevalence in 50-54 years-age groups (17.86%), followed by 30-34 years-age group (13.09%), 40-44 years-age group (9.53%), and 55-59 years-age group (9.53%) respectively (Figure 1).

The similar prevalence was also found in some groups such as 35-39 and 45-49 years-age group (8.33%), 15-19 and 65-69 years-age group (3.57%), 75-79 and 80-84 years-age group (2.38%), and 0-4,70-74, and 85-89 years-age group (1.19%).

According to gender, the prevalence of thyroid carcinoma for male gender is about 26.2% (n=22) and 73.8% (n=64) in females (Table 1). The ratio of male to female was about 1:3 where the results suggest that females were 3 times more prevalence in thyroid carcinoma than males. However, based on the histological type of thyroid carcinoma, papillary was the highest prevalence in both males (59.1%) and females (80.65%) group, followed by anaplastic and mucoepidermoid in males, and for follicular type thyroid carcinoma in females. (Figure 2).

Besides based on gender, papillary thyroid carcinoma was also the highest prevalence in the study which attributed to 75% (n=63), followed by follicular 8.3% (n=7), then anaplastic 5.9% (n=5) and mucoepidermoid 3.6% (n=3). Poorly differentiated, squamous cell and medullary thyroid carcinoma has the same prevalence of 2.4% (n=2) (Figure 3)

DISCUSSION

Based on this research, the highest number of people affected by thyroid carcinoma falls in age group 50-54 years old. The second highest cases fall in age group 30-34 years old. A study conducted by Pramod T et al. in 2016 has found that majority of the thyroid carcinoma cases was 21-50 years old group with average.⁷ Our study found a different results due to the peak incidence happens to fall in age group 50-54 years old while the study conducted by Pramod et al. says that maximum age for peak incidence is 50 years old.⁷ A study conducted by Katoh H found that thyroid carcinoma in childhood is rare.⁵ Based on our study only 1 case was seen to fall in this childhood category so we can conclude that it's true

Based on this research it can be concluded that women are three times more affected than man. The ratio male: female is 1:3. A study conducted by Quang T et al. in 2015 found that the male:female ratio of thyroid cancer was 1:3 which quite similar with this research.² Another study conducted by

Table 1. Baseline characteristic of participants based on sex

| Gender | Number (n) | Prevalence (%) |
|--------|------------|----------------|
| Male | 22 | 26.2 |
| Female | 62 | 73.8 |
| TOTAL | 84 | 100 % |

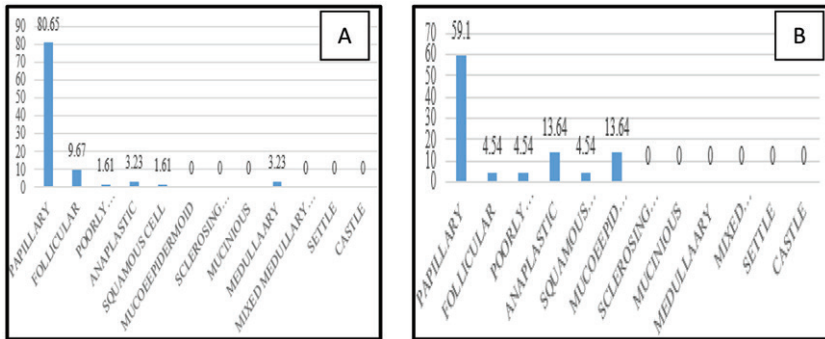


Figure 2. Histological type of thyroid carcinoma based on gender. (A) Females and (B) Males

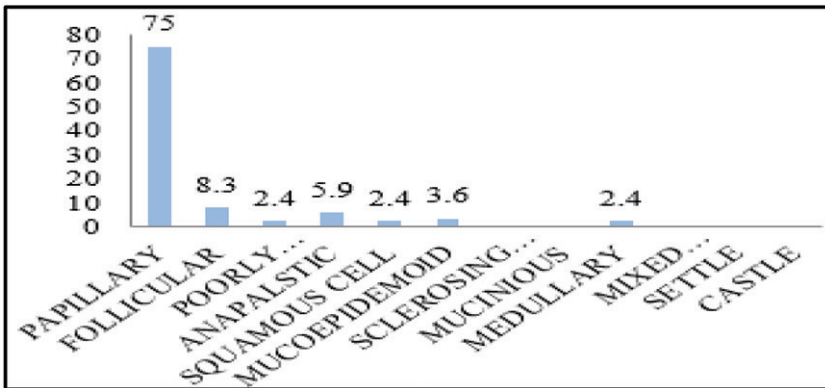


Figure 3. The characteristic of thyroid carcinoma among patients at Sanglah General Hospital based on histological types.

Pramod et al found that male: female ratio turns out to be 1:5.⁷ This may due to the difference in number of samples used and the duration of study. Somehow all of the related researched found that women are more prone to thyroid carcinoma.

The most common type of thyroid carcinomas found in sample are papillary that is about 75% followed by follicular, anaplastic and mucoepidermoid. The other three type such as poorly differentiated, squamous cell and medullary stay the lowest and the same number. There are no cases related to sclerosing mucoepidermoid with eosinophilia, mucinous, mixed medullary and follicular, SETTLE and CASTLE. A study conducted by T Pramod (2016) found that papillary

carcinoma has the highest ranking followed by follicular, medullary and anaplastic. Comparing these two studies, we can conclude that only data regarding papillary and follicular tally but the rest differs. This may due to some sample and duration of the research conducted. Since this research is only 1 year duration and only 84 samples are used chances for some dissimilarity is probably high.

CONCLUSION

The highest number of people affected by thyroid carcinoma falls in age group 50-54 years old, where women are three times more affected toward thyroid carcinoma than man. The most common type of thyroid carcinomas found in the sample is papillary thyroid carcinoma in both genders.

REFERENCES

- Burch H. Follow-up strategy in papillary thyroid cancer. In: Wartofsky L, Van Nostrand D, editors. *Thyroid cancer: a comprehensive guide to clinical management*. 2nd ed. Totowa: Humana Press; 2006; 289-92.
- Quang TN, Lee EJ, Huang MG, Park YI, Khullar A, Plodkowski RA. Diagnosis and Treatment of Patients with Thyroid Cancer. *Am Health Drug Benefits*. 2015; 8(1): 30-40.
- Schonfeld S, Ron E, Kitahara C, Brenner A, Park Y, Sigurdson A, Schatzkin A, González A. Hormonal and reproductive factors and risk of postmenopausal thyroid cancer in the NIH-AARP Diet and Health Study. *Cancer Epidemiology*. 2011; 35(6):e85-e90.
- Brown RL, de Souza JA, Cohen, E. Thyroid Cancer: Burden of Illness and Management of Disease. *J Cancer*. 2011; 2:193-199.
- Katoh H, Yamashita K, Enomoto T, Watanabe M. Classification and General Considerations of Thyroid Cancer. *Ann Clin Pathol*. 2015; 3(1):1045
- Yassin E. Diagnostic criteria of well differentiated thyroid tumor of uncertain malignant potential; a histomorphological and immunohistochemical appraisal. *Journal of the Egyptian National Cancer Institute*. 2015; 27(2):59-67.
- Pellegriti G, Frasca F, Regalbuto, C., Squatrito, S. and Vigneri, R. Worldwide Increasing Incidence of Thyroid Cancer: Update on Epidemiology and Risk Factors. *Journal of Cancer Epidemiology*. 2013; 1-10.
- Schneider D, Chen H. New developments in the diagnosis and treatment of thyroid cancer. *CA: A Cancer Journal for Clinicians*. 2013; 63(6):373-394.
- Thyroid Carcinoma Task Force AACE/AAES Medical/Surgical Guidelines for Clinical Practice: Management of Thyroid Carcinoma. *Endocrine Practice*. 2001; 7(3):202-220.
- Pramod T, Shivaswamy BS, Ananth G, Rajashekara Babu G, Latha K, Jagadeesh K. Clinical Study of Carcinoma Thyroid and its Management. *Int J Sci Stud* 2016;3(10):36-42



This work is licensed under a Creative Commons Attribution