Incidence of Thyroid Disorders in Central India: Retrospective Analysis at Rural Tertiary Care Hospital

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ABSTRACT

Introduction: The interplay between inflammatory and neoplastic disorder is a matter of controversy in thyroid. Thyroid disease is being increasingly diagnosed with greater awareness and is one of the chronic noncommunicable disease affecting women more though male population is not spared of the ailment.

Material and methods: The retrospective analysis of 194 cases irrespective of their age and sex were considered carried out for five years (May 2012- 2016). Patients presenting with infective pathology and traumatic origin were excluded from the study.

Results: Among thyroid disorders, 34 (17.52%) were males and 160 (82.47%) were females and the prevalence of disorders was significantly higher in females. Thyroid cancers was in 64 patients accounting 33 % of total cases with highest being of papillary cancers 39, followed by follicular type 17, anaplastic type 3 and medullary type 5 and 3 cases shows regional metastasis. Further, 117 (60.3%) of patients showed benign conditions 06 had follicular adenoma, colloid goiter 51, multinodular goiter 44. eight patients have autoimmune Hashimoto's thyroiditis, and solitary thyroid nodule were reported in eighteen cases. Of total 194 cases, 69 hemithyroidectomy, 64 total thyroidectomy, 44 subtotal thyroidectomy and 3 completion thyroidectomy done.

Conclusions: The untreated thyroid disease can produce serious consequences to the body especially cardio vascular and central nervous system diseases. So improved public awareness and understanding of thyroid disorders is essential among patients and their families to cope with the thyroid illness. Key words: Thyroid disorder, thyroidectomy.

INTRODUCTION

According to projection from various studies, it has been estimated that about 42 million people in India suffer from thyroid diseases. ^[1] The absolute rates of thyroid carcinoma in females were four times those seen in males. However, the thyroid cancer specific mortality rate has remained stable over the past 35 years. ^[2]

The interplay between inflammatory and neoplastic disease is a matter of controversy in thyroid. The hypothesis that patients of Hashimoto's thyroiditis have increased risk of developing papillary carcinoma still remains unproven. ^[3] Thyroid disease is being diagnosed with greater care and is such a chronic noncommunicable disease which affects women more although male population is not completely protected of the misery. ^[4]

Our understanding of the effects of thyroid hormones under physiological circumstances as well as in pathological conditions has increased dramatically during the last two centuries and it has become clear that overt thyroid dysfunction is associated with significant morbidity and mortality.

The thyroid lesions clinically have been categorized as hypothyroid, euthyroid and hyperthyroid states. Thyroid pathology includes a whole spectrum within themranging from hormonal imbalances, manifesting as obvious goitrogenic enlargements in the neck (surgical causes) -

consisting of endemic, autoimmune etiology to neoplastic lesions.

Thyroid lesions are influenced by numerous epidemiological factors which are age, sex, region, diet, iodine intake, radiations and environmental factors.

In India the scenario of thyroid disease per se has changed from a predominant iodine deficient nation to now an iodine sufficient population. The global goiter prevalence is more than 2 billion and more than 40 million in India. ^[5] The true prevalence and incidence of thyroid disorders in India is difficult to evaluate. conservative estimates put even the geographical prevalence around 42 million cases of iodine deficiency disease. ^[6] The National Cancer Institute data suggests that thyroid cancer is the most common type of endocrine-related cancer and estimates 64,330 new cases in 2016. Thyroid malignancy represents approximately 3.8% of all new cancer cases.^[7]

Thyroid diseases are the commonest among all the endocrine diseases in India.^[1] Despite the coverage of National iodine deficiency diseases control programme (NIDDCP) in India, iodine deficiency is still rampant in many parts of India.^[8]

The nationwide relative frequency of thyroid cancer among all the cancer cases 0.1%-0.2%. The was age-adjusted incidence rates of thyroid carcinoma per 100,000 are about 1 for males and 1.8 for females according to the Mumbai Cancer Registry, which covered a population of 9.81 million subjects. The histological types of thyroid cancer were studied in a Hospital Cancer Registry of 1185 "new cases" of thyroid cancer.^[9] The incidentally detected thyroid carcinoma has been explained in detail in various autopsy and clinical studies in the literature. It is well known fact that the thyroid abnormalities are present all across the country in its various forms and this study highlights the disease burden in the Central Indian population.

The retrospective analysis carried out at tertiary care teaching hospital in the central India. A total of around 318 cases of thyroid were initially collected from OPD and indoor patients and subsequently the histopathology section.

Among them, 194 cases of actual thyroid lesions were included in this study. The cases irrespective of their age and sex were considered.

Patients presenting with infective pathology and traumatic origin were excluded from the study.

The relevant data for all the cases, i.e., age, sex, site of lesion, and diagnosis, were all retrieved from department of Orthopedics, Surgery, Obstetrics and Gynecology, Radio diagnosis and Pathology departments.

RESULTS

The distribution of thyroid disorders according to sex is shown graphically in Figure 1. Among thyroid disorders, 34 (17.52%) were males and 160 (82.47%) were females and the prevalence of disorders was significantly higher in females

The distribution of thyroid disorders according to age is depicted in Figure 2. Of total thyroid disorders, 49 (25.25%) patients were between 10 and 30 years, 113 (58.24 %) patients were 31-50 years, 52 (26.80 %) patients were 51-70 years.

The distribution of thyroid disorders is summarized in Figure 3. Of total malignancies, thyroid cancers was in 64 patients accounting 33% of total cases with highest being of papillary cancers 39, followed by follicular type 17, anaplastic type 3 and medullary type 5 and 3 cases shows regional metastasis. Further, 117 (60.3%)of patients showed benign conditions 06had follicular adenoma, colloid goiter 51, multinodular goiter 44, eight patients have autoimmune Hashimoto's thyroiditis, and solitary thyroid nodule were reported in eighteen cases. Of total 194 thyroid disorders patients, 183 patients were operated of which 69patients

MATERIAL AND METHODS

underwent hemithyroidectomy, 64patients underwent total thyroidectomy, 44patients underwent subtotal thyroidectomy and 3 patients underwent completion thyroidectomy. Further, three patients underwent for chemotherapy and six patient underwent for enucleation.



Figure 1: The distribution of thyroid disorders according to sex.

Out of total 51 cases of colloid goiter on FNAC three were diagnosed as papillary carcinoma on histopathological examination after surgery. These three cases were advised and subsequently operated for completion thyroidectomy after suitable investigation.

All patients were discharged around 5^{th} to 8^{th} days after surgery.



Figure 2: The distribution of cases according to age group.



Figure 3: The distribution of thyroid disorders.

DISCUSSION

This study involved retrospectively analysing the obtained data so as to make available information and statistics that would be invaluable in setting priorities in view of the limited resources allocated for management of these disorders. The burden of thyroid disorders in the Indian population is huge. Thyroid disorders are the commonest among all the endocrine diseases in India. Despite the coverage of National iodine deficiency diseases control Programme (NIDDCP) in

India, iodine deficiency is still rampant in many parts of India.^[10]

Tumors of thyroid gland are the most common endocrine neoplasms found in India out of which 5-10% of all thyroid nodules are carcinomas.^[11]

The mean age of patients in this study was 42.3 years with a range of 13–70 years with female predominance.

One hundred and sixty four cases underwent surgery. All of these cases had histological confirmation. Remaining thirty cases were not reported after fine needle aspiration cytology for further management during the course of study. The most common histological diagnosis was colloid goiter (66cases) followed by 44 cases of multinodular goiter which is similar to the findings by other author. ^[12, 13]

There is a higher incidence of undifferentiated thyroid carcinomas in iodine deficient areas. ^[14] Sometimes, in iodine deficiency papillary neoplasms predominate over follicular cancers. While in our study papillary carcinomas comprised of 23.71 % cases while follicular carcinoma were 9.2 % of all the thyroid cancers.

The incidence of thyroid cancers increases with advancing age. In our study, out of 194 patients, 129 patients affected were from the age group of 31-60 years and 16 patients affected were above 60 years. Thyroid cancer is more common in females than males. ^[15]

The female to male ratio was 4.7:1 which is similar to findings in other studies. ^[13, 16-17]

The incidence of thyroid diseases is found to be more in females than males^[18] perhaps due to different metabolism of iodine during adolescent growth.^[19]

The literature also states that there can be biological changes occurring during pregnancy which may increase the chances of thyroid carcinoma. Some genetic syndrome like Gardner syndrome, adenomatous polyposis coli, and Cowden's disease are associated with an increased risk of thyroid cancer.^[20]

There are also evidences stating that individuals with Hashimoto's thyroiditis are

more prone to develop thyroid lymphomas. [21]

The thyroid gland is usually very sensitive to both external and internal radiation. Radio-iodine is employed therapeutically for diffuse and nodular toxic goiter and thyroid cancer. This gland is arguably the only endocrine organ with a documented major increase in the incidence of cancers after radiation exposure, especially in children.

The incidence of regional metastasis was very minimal with very less mortality.

This retrospective analysis suggests that for early identification of the thyroid disorders or nodules screening and thyroid hormones level should be done for all age groups of general population. There must be congenital hypothyroidism screening for all newborns and establishment of a national screening program. FNAC remains the definitive screening mode of investigation followed by the gold standard histopathological examination. Implementing these preventive measures would go a long way in improving and managing the thyroid health of our population.

CONCLUSION

Diagnosis and management of thyroid disorders in Indian subcontinent remains suboptimal. Among all entities of thyroid disease, the prevalence of benign thyroid diseases was higher. Colloid goiter was the most common disease in this study. However, the serum TSH levels and ultrasound study are very sensitive and specific for diagnosis. Histopathological examination is valuable for confirming diagnosis. Multi-centric studies are required in India to determine the true incidence and overall outcome of diseases. Thyroid disorder registries may stand helpful in determining the load of thyroid disorders and this knowledge can be of much help in changing the approach of management of these disorders.

The untreated thyroid disease can produce serious consequences to the body especially cardio vascular and central nervous system

diseases. So improved public awareness and understanding of thyroid disorders is essential among patients and their families to cope with the thyroid illness.

REFERENCES

- 1. N Kochupillai. Clinical Endocrinology in India. 2 Current Science 2000, 8: 1061-7.
- https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC5686600/pdf/js-01-480.pdf.
- Ott RA, McCall AR, McHenry C, Jarosz H, Armin A, Lawrence AM, et al. The incidence of thyroid carcinoma in Hashimoto's thyroiditis. Am Surg [Internet]. 1987 Aug [cited 2019 Aug 8];53(8):442–5. Available from: http://www.ncbi.nlm.nih.gov/pubmed/36058 64
- 4. Shah SN, Joshi SR. Thyroid as an endocrine organ. JAPI 2000;48(Supp 1):7-8.
- 5. Shah SN, Joshi SR. Goiter and Goitrogenesis- some insights. JAPI 2000; 48(Supp 1):13-4.
- Abraham R, Murugan VS, Pukazhvanthen P and Sen SK. Thyroid Disorders in Women of Puducherry. Indian Journal of Clinical Biochemistry 2009;24:52-59.
- National Cancer Institute. Surveillance, Epidemiology, and End Results (SEER). SEER Stat Fact Sheets: Thyroid Cancer. http://seer.cancer.gov/statfacts/html/thyro.ht ml).
- Sheila C Vir. Current Status of Iodine Deficiency Diseases and Strategy for Its control in India Indian J Pediatr 2002: 69: 589-96.
- Gangadharan P, Nair MK, Pradeep VM. Thyroid Cancer in Kerala. In: Shah AH, Samuel AM, Rao RS, editors. Thyroid Cancer- An Indian Perspective. Mumbai: Quest Publications; 1999. pp. 17–32.
- Chakrabarti P, Chatterjee S, Mondal K et al. Spectrum of Thyroid Disorders In Bankura District, West Bengal, India: A Cross-Sectional Observational Study. Journal of Dental and Medical Sciences 2016; 15(7):41-44.
- Gharib H. Current evaluation of thyroid nodules. Trends Endocrinol Metab 1994; 5:365-9.

- Chalya PL, Rambau P, Mabula JB, Kanumba ES, Giiti G, Chandika AB, et al. Patterns and outcome of surgical treatment of goiters at Bugando Medical Centre in Northwestern Tanzania. Tanzan J Health Res 2011;13:1-10.
- Solomon R, Iliasu Y, Mohammed AZ. Histopathological pattern of thyroid lesions in Kano, Nigeria: A 10-year retrospective review (2002-2011). Niger J Basic Clin Sci 2015;12:55-60.
- David S, Fraumeni Jr JF. Cancer Epidemiology and Prevention. Eastbourne, UK; WB Saunders Co.; 1982.
- 15. Tucker MA, Jones PH, Boice JD Jr, Robison LL, Stone BJ, Stovall M, et al. Therapeutic radiation at a young age is linked to secondary thyroid cancer. Cancer Res 1991;51:2885-8.
- Nggada HA, Ojo OS, Adelusola KO. A histopathological analysis of thyroid diseases in Ile-Ife, Nigeria. A review of 274 cases. Niger Postgrad Med J 2008;15:47-51.
- Nzegwu MA, Ezume ER, Njeze GE, Olusina DB, Ugochukwu. A histological update of thyroid lesions in Enugu Nigeria. A 5 year retrospective review. Asian J Exp Biol Sci 2010;1:430-3.
- Al Shahrani AS, El-Metwally A, Al-Surimi K, Salih BS, Saleh Y, Al-Shehri A, et al. The epidemiology of thyroid diseases in the Arab world: A systematic review. J. Public Health Epidemiol 2016;8;17-26.
- 19. Nggada HA, Ojo OS, Adelusola KO. A histopathological analysis of thyroid diseases in Ile-Ife, Nigeria. A review of 274 cases. Niger Postgrad Med J 2008;15:47-51.
- 20. Clark OH. Total thyroidectomy: The treatment of choice for patients with differentiated thyroid cancer. Ann Surg 1982; 196:361-70.
- 21. Mazzaferri EL. Managing small thyroid cancers. JAMA 2006;295:2179-82.

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