Research Paper

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Prevalence of Various Thyroid Lesions in Kanchipuram District, Chennai, Tamilnadu.

Medical Science

KEYWORDS : Thyromegaly, Thyroiditis, Nodular Hyperplasia, Follicular Neoplasm

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ABSTRACT

Background: In Kanchipuram District places like Kundrathur,Poonamalle, Mangadu little is known about the prevalence of Various Thyroid lesions. Objective is to determine the causes of Thyromegaly in this area. Materials and Methods: A total of 200 Patients who came with Thyromegaly or nodule in Thyroid were included in this study.For all of them FNA and Partial or Total excision of Thyroid gland was done. Cytopathological, Gross,and Histopathological study were carried out for all cases. Age ranged from 16 years to 60 years with a mean age of 38 years. Results: Of the 200 cases 156 were females and 44 were males Majority of the patients had Diffuse or Nodular Hyperplasia of the Thyroid where as few had malignancies. Prevalence of benign causes of Thyromegaly can be easily tackled in the community . Conclusion: Diffuse and Nodular Hyperplasia along with Colloid nodule contributed to 82% of Thyromegaly.

Summary

Despite its limitations, FNA biopsy is extremely helpful in the diagnosis of many thyroid conditions, including goiter, thyroiditis, and neoplasms. In fact, FNA biopsy is the best test available for the diagnosis of thyroid lesions, One of the most difficult problems for the pathologist is to be confident that a follicular adenoma - usually a benign nodule - is not a follicular cell carcinoma or cancer. In these cases, it is up to the physician and the patient to weigh the option of surgery on a case-by-case basis, with less reliance on the pathologist's interpretation of the biopsy. It is also important to remember that there is a small risk (3%) that a benign nodule diagnosed by FNA may still be cancerous. Thus, even benign nodules should be followed closely by the patient and physician.

Introduction

Fine-needle aspiration (FNA) biopsy has brought about profound changes in the practice of medicine, and there is no better example than the introduction of FNA biopsy into the evaluation of thyroid disease. When FNA biopsy was added to the diagnostic armamentarium, the rate of thyroid surgery was cut in half, which resulted in substantial savings in health care expenditures. Although we can certainly take pride in this success, Despite its limitations, FNA biopsy is extremely helpful in the diagnosis of many thyroid conditions, including goiter, thyroiditis, and neoplasms. In fact, FNA biopsy is the best test available for the diagnosis of thyroid lesions. Thyroid nodules are solid or fluid-filled lumps that form within the thyroid, a small gland located at the base of the neck, just above the breast bone.

The great majority of thyroid nodules aren't serious and don't cause symptoms. Thyroid cancer accounts for only a small percentage of thyroid nodules. Most thyroid nodules don't cause signs or symptoms. Occasionally, however, some nodules become so large that they can. Be felt, Be seen, often as a swelling at the base of your neck, Press on your windpipe or esophagus, causing shortness of breath or difficulty swallowing

In some cases, thyroid nodules produce additional thyroxine, a hormone secreted by your thyroid gland. The extra thyroxine can cause symptoms of hyperthyroidism such as, Unexplained weight loss, Intolerance to heat, Tremor, Rapid or irregular heartbeat, Sudden weight loss even though your appetite is normal or has increased, A pounding heart, Trouble sleeping, Muscle weakness, Nervousness or irritability

Causes

Several conditions can cause nodules to develop in the thyroid gland:

- **Iodine deficiency.**

Lack of iodine in your diet can sometimes cause the thyroid gland to develop thyroid nodules. But iodine deficiency is uncommon, where iodine is routinely added to table salt and other foods.

- **Overgrowth of normal thyroid tissue.**

Why this occurs isn't clear, but such a growth — which is sometimes referred to as a thyroid adenoma — is noncancerous and isn't considered serious unless it causes bothersome symptoms from its size. Some thyroid adenomas (autonomous or hyperfunctioning thyroid nodules) produce thyroid hormones outside of your pituitary gland's normal regulatory influence, leading to an overproduction of thyroid hormones (hyperthyroidism).

- **Thyroid cyst.**

Fluid-filled cavities (cysts) in the thyroid most commonly result from degenerating thyroid adenomas. Often, solid components are mixed with fluid in thyroid cysts. Cysts are usually benign, but they occasionally contain malignant solid components.

- **Chronic inflammation of the thyroid (thyroiditis).**

Hashimoto's disease, a thyroid disorder, can cause thyroid inflammation resulting in nodular enlargement. This often is associated with reduced thyroid gland activity (hypothyroidism).

- **Multinodular goiter.**

"Goiter" is a term used to describe any enlargement of the thyroid gland, which can be caused by iodine deficiency or a thyroid disorder. A multinodular goiter contains multiple distinct nodules within the goiter, but its cause is less clear.

- **Thyroid cancer.**

Although the chances that a nodule is malignant are small, you're at higher risk if you have a family history of thyroid or other endocrine cancers, are younger than 30 or older than 60, are a man, or have a history of radiation exposure, particularly to the head and neck. A nodule that is large and hard or causes pain or discomfort is more worrisome in terms of malignancy.

- For purposes of this discussion, *follicular lesions of the thyroid* are defined as follicular carcinomas, follicular adenomas, and nodules of goiters. Specifically excluded from the present definition are follicular variant of papillary carcinoma and Hürthle cell tumors. Although follicular variant of papillary carcinoma enters into the differential diagnosis of follicular thyroid lesions, it has its own diagnostic features, primarily related to the nucleus (eg, grooves, pseudoinclusions, "Orphan Annie eyes"). Hürthle cell tumors present a unique set of diagnostic challenges and are not further considered herein.
- Diagnosis of follicular lesions, as defined in the preceding paragraph, has long been considered a diagnostic gray area in thyroid cytology. As cytopathologists, we generally admit

that we cannot distinguish reliably between follicular adenomas and follicular carcinomas, which we therefore lump together as follicular neoplasms (we should also include cellular nodules of nonneoplastic goiters in this diagnostic gray zone). Owing to our diagnostic limitations, many patients ultimately proven to have benign follicular lesions (goiters, adenomas) are unnecessarily operated on because we cannot exclude the possibility of follicular carcinoma by aspiration biopsy.

- Follicular carcinoma traditionally has been considered the second most common malignant neoplasm of the thyroid (after papillary carcinoma). Current texts state that the relative frequency of follicular carcinoma is as high as 20% of cases of thyroid cancer (range, 5%-20%). However, a contrary view is that follicular carcinoma of the thyroid is a disease that recently has become quite rare.
- Follicular carcinoma is associated with iodine deficiency in the diet.

Materials and Methods

A descriptive Cyto and Histopathology survey of Various lesions of Thyromegaly was carried out in and around Mangadu, Kundrathur and Poondamalle of Kanchipuram District using Haematoxylin and Eosin- H&E ,Papanicolau stain of FNA Smears and H&E Stain of Histopathology slides. A standardized protocol was followed.

Study Population

The study population comprised of all consulting females and males between the ages of 16 to 60 years for Thyromegaly to General Surgical and ENT OP department during July 2012 to June 2014 of Sri Muthukumaran Medical College Hospital and Research Institute, Chikkarayapuram, Chennai were invited to participate till we reached 200. Eligibility of the potential study participants was checked and verbal consent was obtained by the medical officers in the concerned Department.

Age in Years and Number of Patients

16 - 25	26 - 35	36 - 45	46 - 55	56 and above
72	66	32	18	12

Data and Specimen collection

Basic investigations like Complete Haemogram, RBS, Lipid profile, Blood grouping,BUN, CT,BT,PT, SGOT, SGPT, Thyroid Hormone assay, Ultrasound Neck, Thyroid scan for Thyroid Nodule cases and,FNA was done for all cases.Based on Cytopathology report Surgery was planned and sent to Histopathology. Nodules that produce excess thyroid hormone — called hot nodules — show up on the scan because they take up more of the isotope than normal thyroid tissue does. Cold nodules are nonfunctioning and appear as defects or holes in the scan. Hot nodules are almost always noncancerous, but a few cold nodules are cancerous.

Laboratory method

FNA slides were stained for all 200 cases using Haematoxylin and Eosin- H&E ,Papanicolau stain and H&E Stain of Histopathology slides. A standardized protocol was followed. Experienced and Competent Cytopathologist and Histopathologist interpreted the slides and gave a definitive diagnosis.

Results

Various lesions of FNA

Diff.hyper plasia	Nod.hyper plasis	Dominat. Nodule in diff. Hyperplasia	adenoma	Thyroiditis	Follicular Neoplasm	Pap.ca	Others Incl. medullary &anaplastic
35	47	35	20	32	13	15	3

Various lesions in Histopathology

Diff.hyper plasia	Nod.hyper plasia	Dominat. Nodule in diffuse Hyperplasia	Adenoma Including Follicular &Hyalinising Trabecular Adenoma	Thyroiditis Including Autoimmune &Lymphocytic	Follicular carcinoma	Pap.ca	Others Including medullary &anaplastic
38	50	33	25	26	14	12	2

Among 200 cases of Surgical biopsy, 19% were Diffuse hyperplasia,25% were Nodular hyperplasia,[Fig – 1, 2] 16.5% were Dominant nodule in Diffuse Hyperplasia,12.5% were Adenoma including Follicular and Hyalinising Trabecular Adenoma, [Fig 3,4,] 13% were Thyroiditis which includes Auto immune and Lymphocytic Thyroiditis,

[Fig -5,] 7% were Follicular carcinoma, [Fig – 6, 7] 6% were Papillary carcinoma and 1% were Others including Medullary carcinoma and Anaplastic carcinoma. [Fig – 8]

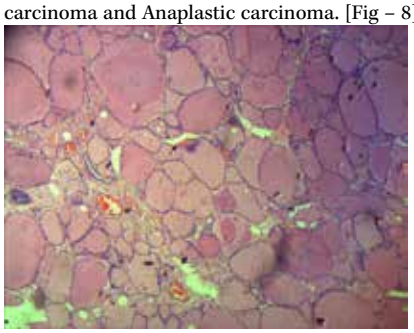

Fig -1 Diffuse Hyperplasia of Thyroid

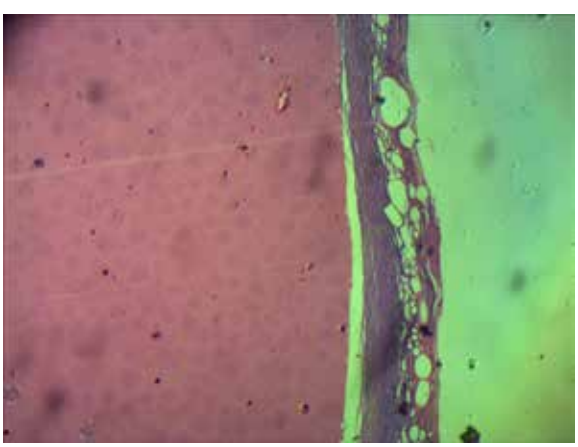

Fig -2 Colloid Nodule of Thyroid

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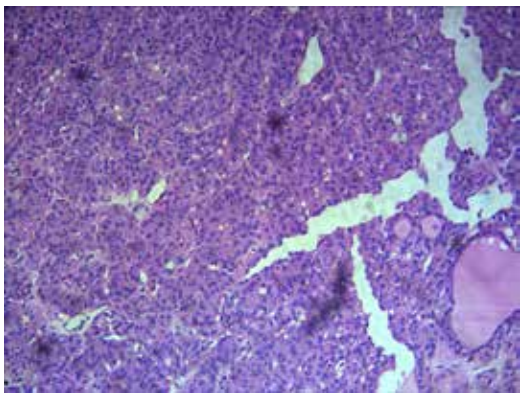

Fig -3 Hyalinising Trabecular Adenoma of Thyroid

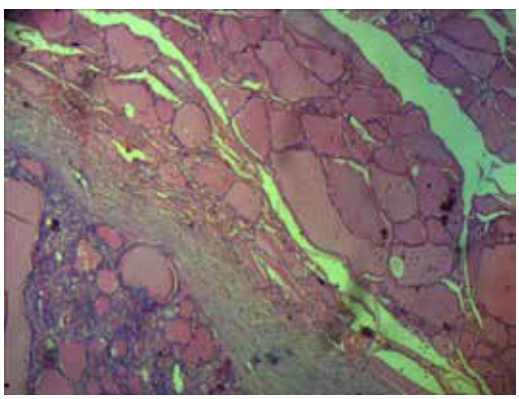

Fig -4 Follicular Adenoma of the Thyroid

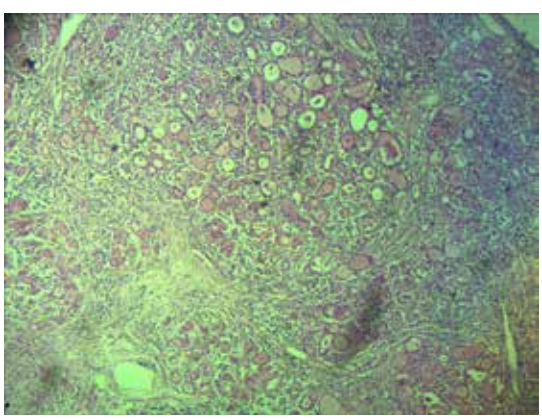

Fig – 5 Auto immune Thyroiditis of Thyroid

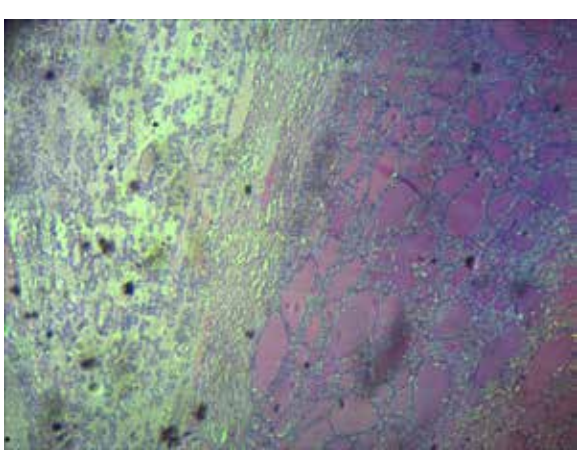

Fig – 6 Follicular carcinoma of Thyroid

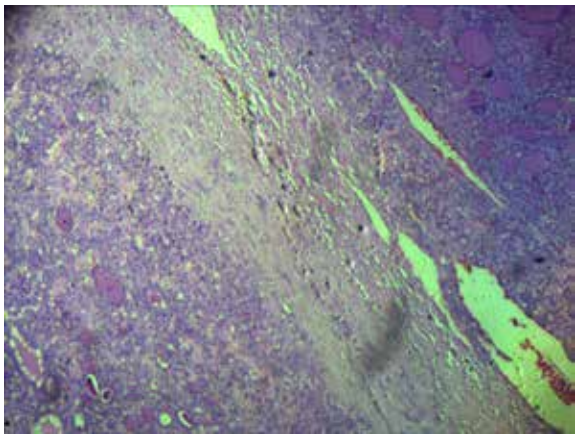

Fig - 7 Follicular Carcinoma of Thyroid

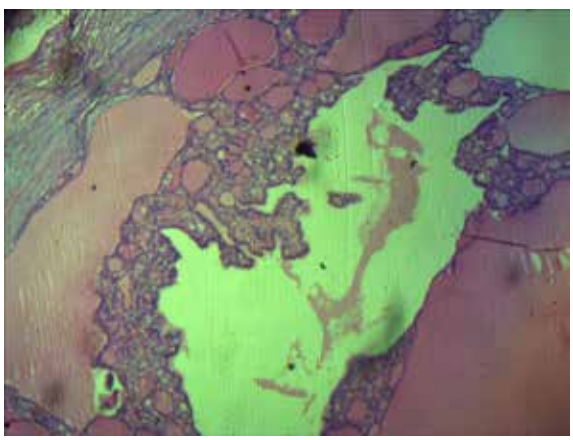

Fig – 8 Papillay carcinoma of Thyroid

Discussion

Cancer of the thyroid is the most common endocrine malignancy. Some 5-10% of patients with thyroid cancer will die of their disease. Thyroid neoplasms arising from follicular cells (adenoma, carcinoma, and follicular/papillary carcinoma) show a broad range of overlapping clinical and cytologic features. A clear distinction between benign and malignant disease based solely on cytological examination of a needle biopsy specimen may be difficult. For this reason, a surgical procedure to remove all or a large portion of the thyroid gland may be necessary to obtain sufficient tissue for a definitive diagnosis of follicular thyroid cancer. Pathological examination showing capsular or vascular invasion may be required for this determination. Thyroid cancers are found more often in patients with a history of low-dose or high-dose external irradiation to the cervical or thyroid area. The most common thyroid tumor to develop after exposure to radiation is papillary thyroid cancer. Patients whose thyroid cancer has developed following radiation to the head and neck area may present with more extensive disease. Overall, about 5% of patients with thyroid cancer have metastases beyond the cervical or mediastinal area on initial presentation, 2-3% of patients with papillary thyroid cancer and 11% of patients with follicular thyroid cancer. For patients with minimally invasive disease, patients according to this study have an excellent prognosis with a limited need for nodal surgery.[1] Activating point mutations in the ras oncogene are well known in patients with follicular adenoma and carcinoma,[2,3,4] especially in poorly differentiated (55%) and anaplastic carcinoma (52%). As a result of such mutations, p21-RAS becomes locked in its active conformation, leading to the constitutive activation of the protein and tumor development[5]The biochemical pathways that this process follows may be therapeutic targets for FTC.[6]

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