



CLINICOPATHOLOGICAL AND BIOCHEMICAL PROFILE OF THYROID MALIGNANCY IN SOLITARY THYROID NODULE IN BURDWAN MEDICAL COLLEGE & HOSPITAL WEST BENGAL

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ABSTRACT **BACKGROUND:** Thyroid nodules are more common in women than men. Incidence increases with age, with spontaneous nodules occurring at a rate of 0.08% per year beginning early in life and extending into the eighth decade. **OBJECTIVE:** To study the incidence of malignancy in the patient with solitary thyroid nodule in Burdwan Medical College & Hospital, West Bengal.

MATERIALS & METHODS: The study was conducted in department of general surgery, Burdwan Medical College & Hospital in 50 patients with solitary thyroid nodule from March 2014 to April 2015. Data collection by detailed history & clinical examination, operation records, FNAC, histopathology reports & laboratory findings.

RESULTS: Out of 50 cases of solitary thyroid nodule were 82% had benign and 18% was malignant. The common causes of solitary nodule were adenomatous goitre (40%), Colloid goitre (26%) & hyperplastic goitre (16%). The functional state of thyroid 54% of cases presented with euthyroid state.

CONCLUSION: The concluded of the study incidence of malignancy in solitary thyroid nodule was 09(18%) with female predominant. The most common type of malignancy was 06(12%) papillary carcinoma.

KEYWORDS : Solitary thyroid nodule (STN), Adenomatous goitre, Colloid goitre, Papillary carcinoma.

INTRODUCTION

Thyroid nodules present a challenge in their diagnosis, evaluation, and management. Often these abnormal growths are large in size and develop at the edge of the thyroid gland, so that they are felt or seen as a lump in front of the neck. The prevalence of these nodules in a given population depends on a number of factors like age, sex, diet, iodine deficiency, and even therapeutic and environmental radiation exposure. Prevalence increases with age, with spontaneous nodules occurring at a rate of 0- 0.8% per year, beginning early in life and extending into the eighth decade [1-2]. True solitary thyroid nodules (STN) occur in 4 - 7% of the adult population. They are present in 5% of persons at an average of 60 years. They are more common in females (6.4%) as compared to males (1.5%) and this predisposition exists throughout all age groups. Many palpable thyroid nodules, thought to be solitary, are actually part of a multi-nodular thyroid gland. In general, a nodule must reach a size of 1 cm in diameter to be detectable by palpation. Thyroid nodules could be adenomas or neoplasms. Most thyroid nodules are benign hyperplastic lesions, but 5 - 20% of these nodules are true neoplasm's in nature. Solitary thyroid nodule first seen can be due to asymmetrical enlargement of one lobe as in chronic lymphocytic thyroiditis, simple goitre, or unilateral agenesis, or rarely due to developmental errors such as ectopic tissue [1-3]. Childhood thyroid nodules need special attention due to higher incidence of malignancy, i.e., 15 - 25% as compared to adults. Further, thyroid cancer runs a more aggressive course in children and is associated with early metastasis locally to regional lymph nodes and distant sites including lungs and bones [3-4]. Recently many investigations including diagnostic imaging studies, serological and cytogenetic tests as well as histopathological techniques are available to evaluate STN. Out of all these investigations, fine needle aspiration cytology (FNAC) has become the diagnostic tool of choice for the initial evaluation of STN [5].

2.MATERIAL & METHODS

The prospective observational hospital-based study was done in the department of General Surgery Burdwan Medical College and Hospital (W.B.) between March 2014 to April 2015 after getting approval of institutional ethics committee.

Recruitment of subjects

The study group comprised of 50 cases of thyroid swelling diagnosed of having solitary thyroid nodule who are admitted in surgical ward (both male and female) in Burdwan Medical College and Hospital (W.B.) with the diagnosis of solitary thyroid nodule.

INCLUSION CRITERIA

1. All Patient with thyroid swelling diagnosed of having solitary thyroid nodule (isolated and dominant nodule).
2. Age of patient > 10 years.

EXCLUSION CRITERIA

1. Multi-nodular goiter, already diagnosed malignancy in thyroid.
2. Family history of thyroid cancer.
3. Age of patient < 10 years.
4. All Pregnant women with thyroid swelling.

Method of data collection

After getting written informed consent all the parameters of the cases included history, detailed clinical examination, investigations which were needed for the study including FNAC/biopsy, biochemical parameters thyroid function tests, and radio-logical x-ray, USG, CT and MRI of neck in selected cases, data were recorded in a standard Proforma.

STATISTICAL ANALYSIS

Standard statistical methods for data compilation and analysis using software SPSS version 20. Statistical analysis was done using descriptive statistics and data were calculated as percentage and proportions.

3.RESULT

A total 50 cases of thyroid swelling diagnosed of having solitary thyroid nodule who are admitted in surgical ward Burdwan Medical College and Hospital (W.B.) including 13(26%) male and 37(74%) females. The age and sex distribution of the patient's ranges are from 11-20 years 04(08%), 21-30 years 15(30%), 31-40 years 08(16%), 41-50 years 14(28%) and 51-60 years 09(18%) Table-1. The functional state of thyroid of the study 27(54%) were euthyroid, 10(20%) were hypothyroid & 13(26%) were hyperthyroid state Table-02. The USG findings of 50 cases of Solitary thyroid nodule (STN) 20(40%) were solid, 15(30%) were mixed and 15(30%) were cystic consistency in nature Table-03. The FNAC/Biopsy findings of 50 cases of STN 41(82%) were benign and 09(18%) were malignant. The rate of benign lesions 20(40%) was adenomatous goitre, 13(26%) were colloid goitre and 8(16%) were hyperplastic goitre. The incidence of malignancy in solitary thyroid nodule was 09(18%) of the present study. out of 09 malignant cases, 6(12%) were papillary carcinoma, 2(4%) were follicular and 1(2%) case were medullary carcinoma.

4.DISCUSSION

A total 50 cases of solitary nodule of thyroid of the study. The age distribution of the study that majority of the patients 15(30%) were between 21-30 years which is similar to other study [6]. In Tyagi M et al. 2018-19 study out of 50 cases of solitary thyroid nodules were female 38(76%) predominant that was similar findings to our study 37(74%) were female [7]. In Fariduddin M et.al. study 127 cases with solitary thyroid nodule 104 were solid & 23 were mixed in consistency, out of the 104 solid cold nodules histopathology revealed 36(34.6%) malignant & 68(65.4%) benign cases and from the 23 mixed cold solitary nodule 5(21.7%) appeared malignant & 18(78.3%) were benign while in our study out of 50 STN cases, 15 was cystic 20 were solid and 15 were mixed consistency in nature. In our study out of 20 cases of solid nodules; 15(75%) were benign and 5 (25%) were malignant, in 15 mixed nodule 11(73.33%) appeared benign and 4(36.63%) were malignant. In Fariduddin M et.al. study malignancy was higher in solid cold group than the mixed cold one but in our study malignancy was higher in mixed nodule [8]. In A. Navnath Tuljapurein et.al 2021 study out of 50 cases, non-neoplastic lesions were 34, suspicious cases were 10 and neoplastic were 6 cases, and in our study out of 50 cases of STN 41(82%) were benign & 09(18%) was malignant in nature. Benign lesions are more common than malignant [9]. In Dong S et.al. study the rate of benign lesions was 78.60% and that of goiter was 29.15%, Hashimoto's thyroiditis 26.57% and thyroid adenoma 15.13% and while in our study rate of benign lesions; n20(40%) were adenomatous goiter, 13(26%) were colloid goiter and hyperplastic goiter was 8(16%) [10]. In the study malignant nodules are more common in females than male. In Khan SA et al. study among 108 cases of solitary thyroid nodule only 19(17.59%) cases were malignant while in our study 50 cases were included and out of total cases 9(18%) cases are malignant so the incidence is 18 % which almost same as above study. Out of 19 malignant cases, 12(63.16%) were papillary carcinoma, 5(26.31%) were follicular carcinoma and 2(10.53%) cases were medullary carcinoma and, in our study, out of 9 malignant cases, 6(66.67%) were papillary, 2(22.22%) were follicular and 1(11.11%) were medullary carcinoma which was almost same as above [11]. In Dr Aimal Munir Tarrar et al. study 2003, 60 patients with clinical STN were included maximum malignant cases were (50%) papillary carcinoma [12].

5.CONCLUSION

Incidence of malignancy in solitary thyroid nodule was 18% in the study. Females are predominantly present with thyroid swelling and the age groups of 21-30 years are mostly affected; malignancy was more predominant in female than male. The most common type of malignancy was papillary carcinoma. Thyroid swelling may be present with any thyroid state but in case of malignancy the patient is euthyroid. Thyroid swelling may be cystic, solid and mixed but in case of malignancy it was more likely solid or mixed in nature. FNAC is very important diagnostic tool for diagnosis of malignancy and in some clinically benign swelling the diagnosis of malignancy is made only by FNAC.

Table-1: Distribution of STN cases according to Sex and Age (n=50).

| Age | Male | Female | Percent |
|-----------------|---------|---------|---------|
| 11-20 Years | 0 | 4 | 8% |
| 21-30 Years | 2 | 13 | 30% |
| 31-40 Years | 3 | 5 | 16% |
| 41-50 Years | 6 | 8 | 28% |
| 51-60 Years | 2 | 7 | 18% |
| Total case n=50 | 13(26%) | 37(74%) | 100% |

Table-2: Distribution of STN cases according to thyroid state of patient (n=50)

| Thyroid state | Benign | Malignant | Percent |
|---------------|--------|-----------|---------|
| Euthyroid | 18 | 9 | 54% |
| Hypothyroid | 10 | 0 | 20% |
| Hyperthyroid | 13 | 0 | 26% |

Table-3: Distribution of STN cases according to USG finding (n=50).

| USG finding | Benign | Malignant | Percent |
|-------------|--------|-----------|---------|
| Cystic | 15 | 0 | 30% |
| Solid | 15 | 5 | 40% |
| Mixed | 11 | 4 | 30% |
| Total | 41 | 9 | 100% |

Table-4: Distribution of STN cases according to FNAC/ Biopsy report (n=50).

| FNAC/ BIOPSY | No of cases | Percent |
|----------------------|-------------|------------|
| Adenomatous goitre | 20 | 40% |
| Colloid goitre | 13 | 26% |
| Hyperplastic goitre | 08 | 16% |
| Benign | 41 | 82% |
| Papillary carcinoma | 06 | 12% |
| Follicular carcinoma | 02 | 04% |
| Medullary carcinoma | 01 | 02% |
| Malignant | 09 | 18% |
| Total | 50 | 100% |

Conflict of Interest: None

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Ethical approval: The study was approved by the Institutional Ethics Committee of Burdwan Medical College & Hospital (W.B.) India.

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