

The incidence of thyroid carcinoma in multinodular goiter: prospective study

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ABSTRACT

Thyroid carcinoma (TC) is a relatively rare tumour, but it represents the most frequent form of cancer of the endocrine glands. Epidemiologically ascertained risk factors are ionising radiation, the presence of thyroid adenoma and multinodular goiter (MNG). Multinodularity of goiter should no longer be considered an indicator of probable benign disease. A prospective analysis was performed on patients operated for multinodular Goiter at Nepal Medical College from January 2009 to November 2011, in order to establish the incidence of carcinoma. The results of this study, demonstrate that in 13.63 % of the patients operated for goiter, the presence of a carcinoma was noticed in the definitive histopathologic examination. Such incidence percentage of MNG is in accordance with the data reported in published reports. Thus, we conclude that the risk of malignancy in MNG has not to be underestimated, and that a dominant nodule in MNG should be valued as if it were a solitary nodule in an otherwise normal gland.

Keywords: Thyroid nodule, malignant nodule, thyroid carcinoma, multinodular goiter.

INTRODUCTION

A very high mortality rate after total thyroidectomy challenged 19th century Surgeons. The answer to that problem was found in large measure by the meticulous attention to surgical anatomy and technique of the 1908 Nobel Prize laureate-Dr Theodor Kocher. In modern endocrine surgical practice, thyroidectomy carries virtually no postoperative mortality and the emphasis has shifted towards preventing its morbidity. Thus total thyroidectomy is safe procedure thyroid carcinoma as well as for multinodular goiter.

Thyroid carcinoma (TC) is a relatively rare tumour, but it represents the most frequent form of cancer of the endocrine glands. It represents 1% of human neoplasias and its annual incidence is estimated worldwide from 0.5 to 10: 100.000 subjects in the world population.¹

Such incidence is increased if cases of occult carcinoma are taken into consideration. This occult carcinoma is a non evident neoplasia, occurring with cervical nodal disease, or accidentally detected in a thyroid that has been removed for another pathology or during an autopsy.² Epidemiologically ascertained risk factors are ionising radiation, the presence of thyroid adenoma and multinodular goiter (MNG).¹ In published reports, the incidence of carcinoma in MNG is reported with a percentage that varies from 7% to 17%.³⁻⁸ Furthermore, it seems that there is no statistically significant difference between the incidence of TC in patients with a solitary nodule, as shown in the post-operation histopathologic exam, and those with MNG.^{6,9} Thus, multinodularity does not seem to be a certain indicative factor of benign disease.^{5,7,8} The aim of the study is to carry out prospective study of patients who have been operated for normal or hyperfunctioning MNG, in order to establish the incidence of the histopathologically documented carcinoma or of the occult carcinoma found only after a complete histopathologic examination of the operated thyroid specimen.

MATERIALS AND METHODS

A prospective study was done at Nepal Medical College Teaching Hospital (NMCTH), Department of surgery for analysis of occult carcinoma among those patients with multinodular goiter who underwent thyroid surgery. During preoperative period we send thyroid ultrasound, FNAC of thyroid swelling and thyroid function test. Our

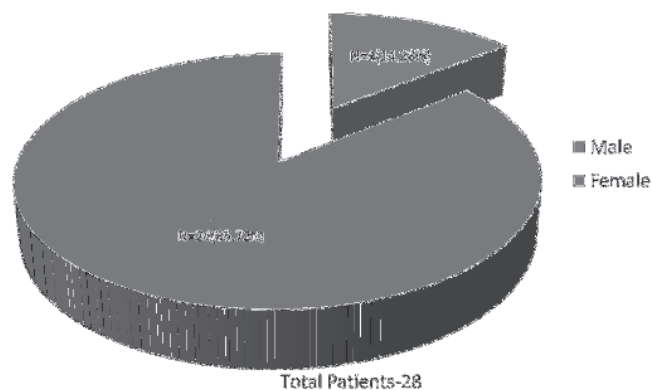


Fig. 1. Sex distribution

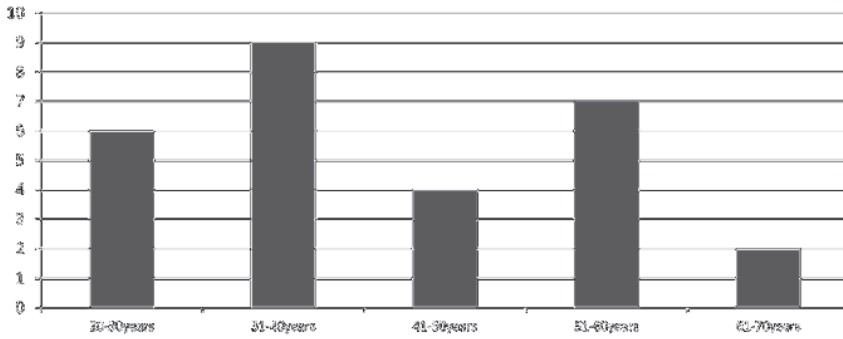


Fig. 2. Age distribution

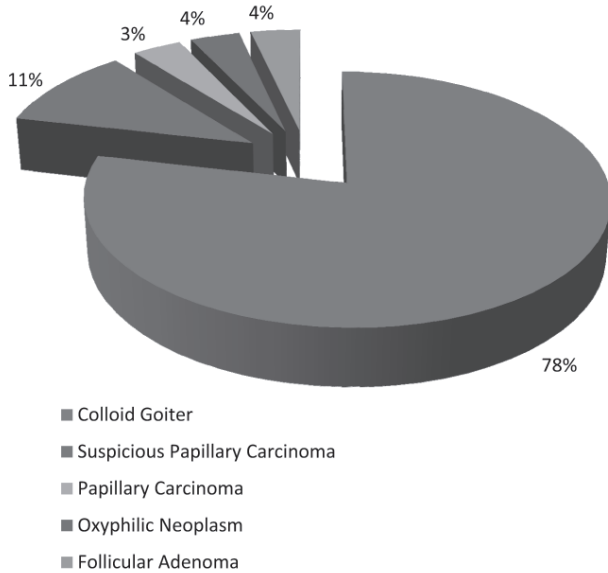


Fig.3. FNAC report

patients underwent hemithyroidectomy, subtotal thyroidectomy or near total thyroidectomy according to their preoperative diagnosis and intraoperative findings.

RESULTS

In our study there were total of 28 patients who underwent thyroidectomy at NMCTH under Department of General Surgery from January 2009 to November 2011. Among those patients 24 were females and 4 were males (Fig.1).

The mean age of our patients was Age-43±13.2 years (Fig.2).

All patients underwent FNAC of the thyroid swelling. Among them 22 patients were reported as colloid goiter, 3 suspicious of papillary carcinoma, 1 papillary carcinoma, 1 oxyphilic carcinoma and 1 follicular adenoma (Fig. 3). Preoperatively thyroid function test was also done (Fig. 4).

Treatment was offered according to preoperative diagnosis and also it depends upon the intraoperative findings. For those with colloid goiter 16 patients underwent with hemithyroidectomy, 4 subtotal and 2

near total thyroidectomy. Similarly with 3 patients who were reported as suspicious papillary carcinoma , one patient underwent with hemithyroidectomy ,1 subtotal and 1 near total thyroidectomy. The patient with preoperative diagnosis of papillary carcinoma underwent near total thyroidectomy. Similarly the one with follicular adenoma underwent hemithyroidectomy and one with oxyphilic carcinoma

underwent subtotal thyroidectomy (Fig. 5).

We send the specimen for histopathological examination. The pathologists reported 18 specimens as colloid goiter, 5 papillary carcinoma, 3 follicular adenoma, 1 follicular carcinoma and 1 Hurtle cell carcinoma (Fig.6). So from these data we can see that 3 cases which were previously labeled as colloid goiter by FNAC report was later turned out to be papillary carcinoma on histopathological report.

DISCUSSION

In the prospective study carried out at department of surgery, Nepal Medical College from January 2009 to November 2011, we had 3 patients with postoperative incidental diagnosis of papillary carcinoma. In our study, we had 13.63% incidence of carcinoma in benign goiter. In one of the study done by Koh and Chang⁴ the incidence of carcinoma in benign goiter varies from 7% to 17%.

In our study, the sensitivity and specificity of FNAC in diagnosing the occult carcinoma in multinodular goiter were 50% and 94.4% respectively. When we compare our data with the one published by Tariq *et al*¹⁰ their specificity of 97.6% was in accordance to our data but their sensitivity was quite high ie 75%. So we can see that the sensitivity of FNAC for detecting occult

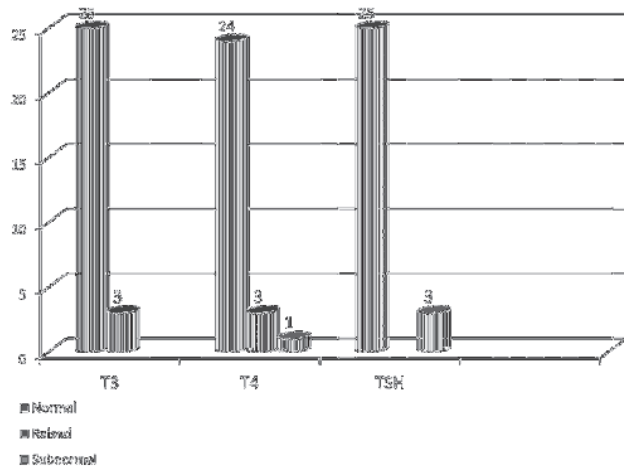


Fig. 4. Thyroid function test

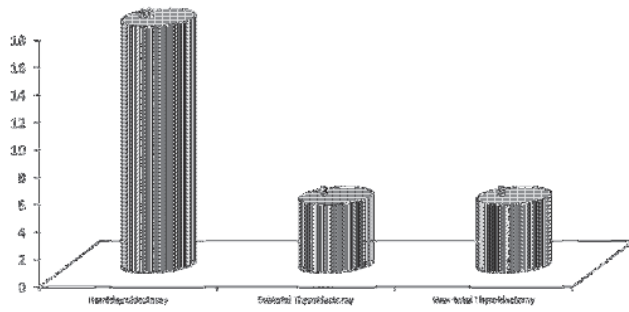


Fig. 5. Types of thyroid surgeries

carcinoma in otherwise benign goiter is quite low and the incidence of incidental carcinoma is 13.63%. Many literature and study had recommended total thyroidectomy for multinodular goiter as well.^{11,12}

Traditionally patients with MNG have been considered less at risk of malignancy than those with single nodule. However, published reports show that the incidence of malignant tumours in patients with single nodule does not differ from those with MNG.^{6,9} Epidemiological studies have demonstrated how the incidence of carcinoma in patients with MNG is higher than the incidence of the general population.^{13,14} In our study also

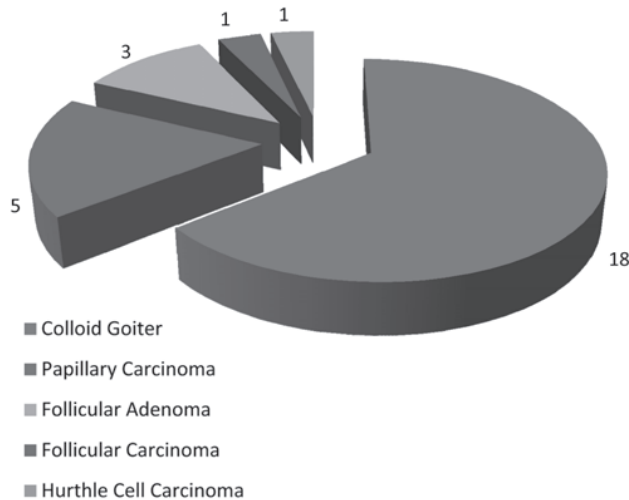


Fig. 6. Histopathological report

there were 13.63% incidence of carcinoma in benign goiter who are treated as benign case before histological evidence of carcinoma. Now to reoperate on these cases is technically difficult and chance of complication like recurrent nerve injury is high. To minimize such situation it is recommended to do total or near total thyroidectomy for multinodular goiter as well.

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