A CLINICAL STUDY ABOUT INCIDENCE OF OCCULT MALIGNANCY IN LONGSTANDING MULTINODULAR GOITRE

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ABSTRACT

BACKGROUND
Goitre is one of the common features of thyroid disease presentation. Most of the thyroid nodules were found accidentally by Ultrasound and clinical evaluation. Historically chances of malignancy in Multinodular Goitre was very low compared to solitary nodular goitre.

The objective of this study is to determine the incidence of occult malignancy in longstanding MNG.

MATERIALS AND METHODS
This is a prospective, observational study conducted from May 2015 - August 2017 by Department of Surgical Oncology, Father Muller Medical College Hospital, Mangalore. All the goitre patients were examined clinically and sonographically. The patient was offered surgery based on suspicious findings in Sonography and FNAC. Post-operative specimens were subjected to histopathological examination to find out the incidence and the types various malignancies.

RESULTS
Among 60 MNG cases, 8 cases (13%) showed malignant foci. Most common type of malignancy observed was Papillary carcinoma (75%).

CONCLUSION
Risk of malignancy is quite significant in longstanding Multinodular goitre. All the patients with Multinodular goitre need proper evaluation, adequate surgery and thorough histopathological evaluation

KEYWORDS
Multinodular Goitre, Thyroid Malignancy, Thyroidectomy.


BACKGROUND
Goitre is one of the common ways of thyroid disease presentation. Most of the Thyroid nodules were found accidentally by Ultrasound (30-50%) and clinical evaluation.[1,2,3]

The incidence of thyroid malignancy ranges from 10 to 13% (11) and incidence further increases if cases of occult carcinoma also included. The availability of effective diagnostic test increases the incidence of occult thyroid carcinoma.[4,5]

Historically chances of malignancy in MNG was very low.[4,6,7] Longstanding MNG is associated with malignancy or not is a longstanding debate. But various studies reported 5 to 15% incidence of malignancy in longstanding MNG.[6,8,9]

The management of solitary nodule has been refined by FNAC, unlike MNG, in which a nodule of a carcinoma can't be differentiated clinically or radiologically amidst other benign nodules.[10,11]

Most common type of thyroid malignancy in longstanding MNG is Papillary Carcinoma.[7,11]

The objective of this study is to determine the incidence of occult malignancy in longstanding MNG.

MATERIALS AND METHODS
This is a prospective, observational study conducted from May 2015 - August 2017 by Department of Surgical Oncology, Father Muller Medical College Hospital, Mangalore. Most of the patients are from coastal Karnataka and Kerala. All the goitre patients were examined clinically and sonographically. Sonography shows Multinodular goitre and shows suspicious features of malignancy, subject to FNAC. FNAC shows follicular neoplasm and equivocal findings taken for Total/near total thyroidectomy.

Inclusion Criteria
A. Longstanding MNG.
B. FNAC Shows follicular neoplasm or equivocal results.
C. USG features of microcalcification, mixed echogenicity.
D. Pressure symptoms.
E. Thyrotoxicosis.
Exclusion Criteria
FNAC-proved malignancy.

RESULTS
In this study, we had 100 patients of Goitre, of these 60 were MNG cases. Among 60 MNG patients, 52 cases (86.7%) were female and 8 cases (13.3%) were male with a striking female predominance. Majority of these patients were in the 3rd and 4th decade (Table 1).

The common presenting complaint was swelling in the neck. Median duration of lump was 12 months. Thyroid Sonography was done in all cases and median numbers of nodules were two and median size of nodule was 1.5 cm. 20 MNG patients showed area of microcalcification with solid and hypoechoogenic areas. FNAC was performed on all cases. The FNAC showed colloid goitre in 11 cases and follicular neoplasm in 9 cases and inconclusive in 10 cases. Of these 9 follicular neoplasm cases, 2 were malignant and while among the 10 cases with an inconclusive FNAC report, 2 revealed malignant focus. Patients were offered surgery based on suspicious findings during the diagnostic workup, equivocal results from the various investigations, compressive symptoms, thyrotoxicosis and cosmesis.

In all cases, total thyroidectomy was carried out and specimens were subjected to a histopathological examination. Histopathology of the specimen revealed that 8 patients had a malignant focus and incidence of carcinoma in MNG in our study. Among the malignancy, Papillary Carcinoma was common (Table 2).

Common age groups for the presentation of carcinoma of thyroid was 41 to 50. Among 8 patients of the MNG and carcinoma thyroid, 7 were female, 1 was male (Table 2). Among the 8 cases of MNG and carcinoma thyroid, 5 patients showed smaller than 2 cm. None of the toxic MNG and hypothyroidism cases revealed a malignant focus.

<table>
<thead>
<tr>
<th>a. Age</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>02</td>
<td>03.3%</td>
</tr>
<tr>
<td>21-30</td>
<td>05</td>
<td>08.3%</td>
</tr>
<tr>
<td>31-40</td>
<td>18</td>
<td>30.0%</td>
</tr>
<tr>
<td>41-50</td>
<td>22</td>
<td>36.7%</td>
</tr>
<tr>
<td>51-60</td>
<td>10</td>
<td>16.7%</td>
</tr>
<tr>
<td>61-70</td>
<td>03</td>
<td>05.0%</td>
</tr>
</tbody>
</table>

Table 1 - Patient Characteristics

<table>
<thead>
<tr>
<th>b. Presenting Complaint</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Swelling in the Neck</td>
<td>50</td>
<td>83.3%</td>
</tr>
<tr>
<td>b. Hyperthyroidism</td>
<td>03</td>
<td>05.0%</td>
</tr>
<tr>
<td>c. Hypothyroidism</td>
<td>02</td>
<td>03.3%</td>
</tr>
<tr>
<td>d. Obstructive symptoms</td>
<td>01</td>
<td>01.7%</td>
</tr>
<tr>
<td>e. Others</td>
<td>04</td>
<td>06.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c. Sex</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>08</td>
<td>13.3%</td>
</tr>
<tr>
<td>Female</td>
<td>52</td>
<td>86.7%</td>
</tr>
</tbody>
</table>

Table 2 - Results of the Study

A. Incidence of malignancy
- Benign: 52 (86.7%)
- Malignant: 08 (13.3%)

B. Type of Malignancy
- Benign: 52 (86.7%)
- Papillary carcinoma: 06 (10.0%)
- Follicular carcinoma: 01 (1.7%)
- Hurthle cell carcinoma: 01 (1.7%)
- Medullary carcinoma: 00 (00%)

C. Sex wise distribution of Malignancy
- Male: 01 (2.5%)
- Female: 07 (7.5%)
- Total: 08 (100%)

D. Age wise distribution of Malignancy
- 0-20: 00 (00%)
- 21-30: 00 (00%)
- 31-40: 03 (37.5%)
- 41-50: 04 (50.05%)
- 51-60: 01 (12.5%)
- >60: 00 (00%)
- Total: 08 (100%)

DISCUSSION
MNG is defined as the palpation of multiple nodules in the enlarged thyroid gland. The risk factors for the development of MNG were iodine deficiency, impairment of hormone synthesis, increased urinary excretion of iodine, presence of thyroid stimulating immunoglobulin.\(^\text{(10)}\)

Thyroid nodules were mostly diagnosed by clinical examination and USG.\(^\text{(1,2,3)}\)50.5% of solitary nodules which are felt on palpation are actually part of the dominant Nodule in MNG. Palpation of multiple nodules hampered by the obesity, short neck and less than 1 cm in size in goitre. Surgery is offered mainly for cosmesis and rarely for toxicity, compressive symptoms and suspicious of malignancy.\(^\text{(12)}\)

Historically, MNG compared to solitary nodule has low risk of malignancy.\(^\text{(4,6,7)}\) However, various studies proved MNG is also one of the risk factor for malignancy.

A study conducted by Sara Jevo\(^\text{(13)}\) reported 8% of malignancy in MNG and Benzhari et al found 9.5% incidence of malignancy in MNG.\(^\text{(14,15)}\) However, Prades et al from France, reports 12.2% incidence of malignancy in MNG.\(^\text{(14,16)}\)

As per literature, most common type of malignancy in MNG was Papillary Ca.\(^\text{(7,3)}\) The incidence of malignancy in MNG in our study was 13% and most common type of malignancy was papillary carcinoma, this is consistent with from Prades et al.\(^\text{(14)}\)

Incidence of malignancy is high on dominant nodules in MNG. Palpation of hard, irregular, fixed thyroid gland, rapidly increasing in size, and associated with cervical lymph adenopathy, recurrent laryngeal nerve palsy and male sex.\(^\text{(14)}\)
A patient with history of neck irradiation and family history of thyroid carcinoma should make the suspicion strong.\(^{(14)}\)

High frequency neck ultrasound and FNAC are valuable preoperative tools for evaluation of MNG for malignancy.\(^{(1)}\)

Sonographic findings suspicious of malignancy are microcalcification, irregular nodule, complex echogenicity.

FNAC is an inexpensive and fast investigation which can be done to obtain the cellular samples.\(^{(6)}\) Sensitivity of FNAC for diagnosing malignancy is 80-85%. Negative FNAC does not rule out malignancy.\(^{(6,7)}\) So USG guided FNAC of suspicious nodule is of great help.

Most common endocrine tumour is thyroid Carcinoma which accounts for 1% of malignancy. Incidence of malignancy varies in different regions of world. For the past 60 years, the incidence of thyroid carcinoma increases by 5 fold (51%).\(^{(17)}\)

The tumours are rare in children and increases with age and females have higher incidence.\(^{(14)}\) Though ionising radiation, iodine deficiency and other factors have been attributed to the increase in thyroid carcinoma, these findings are inconsistent.

Previously, hormonal factors, lactation suppressive drugs and fertility medication have been implicated for the higher incidence of thyroid cancer in females.\(^{(14)}\)But recent studies reported that the use of hormonal therapy of fertility drugs are not associated with thyroid malignancy.\(^{(18,19)}\)

The availability of more sensitive and better diagnostic tools may be responsible for the increasing incidence of thyroid cancer.

Papillary micro carcinoma was a frequent incidental finding in autopsy studies. Papillary microcarcinoma defined by size less than 10 mm in the greatest dimension. Untreated papillary microcarcinoma classically progresses to clinically evident Papillary thyroid carcinoma which was confirmed by various studies.\(^{(5,20)}\) So the treatment of papillary microcarcinoma should be similar to that of conventional papillary carcinoma.\(^{(21)}\)

CONCLUSION
Risk of malignancy is quite significant in longstanding Multinodular goitre. All the patients with Multinodular goitre need proper evaluation, adequate surgery and thorough histopathological evaluation.

REFERENCES