Original Article

Incidental Papillary Thyroid Micro Carcinomas in Patients Undergone for Thyroidectomy

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ABSTRACT

Objective: The present study aims to ponder at incidence of incidental papillary thyroid microcarcinomas along with clinopathological features of the tumors.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Pathology and Surgery, Jinnah Medical College and Jinnah Teaching Hospital Peshawar from July 2016 to December 2017.

Materials and Methods: The research was performed on 1000 patients who were operated for thyroidectomy during one and a half year. For routine histopathological examination H&E stain was used while to stain tumor cells Immunohistochemical markers were used. All the slides were evaluated for papillary thyroid microcarcinomas.

Results: Out of 1000 patients, 186 (18.6%) were found with a malignancy. Among these, 6 (3.22%) were found with follicular carcinoma, 5 (2.68%) with lymphoma, 4 (2.15%) with anaplastic carcinoma, 4 (2.15%) with medullary carcinoma, 2(1.07%) with poorly differentiated carcinoma and 165 (88.70%) with papillary carcinoma. Incidental papillary thyroid microcarcinoma (IPTM) was present in 40 cases. In all the cases, total thyroidectomies were performed. Metastasis and relapse were not detected in any of the cases. Histopathological examination is necessary for thyroidectomy specimens as IPTM may escape fine needle aspiration cytology. As multifocality and bilateriality are quite high in IPTM, total thyroidectomies are best to be performed.

Conclusion: To diagnose papillary thyroid microcarcinoma, we could not depend FNAC alone rather detailed histopathological assessment is necessary.

Key Words: Papillary Thyroid Microcarcinoma , Immunohistochemical markers

Citation of articles: Tariq M, Khan J, Moeed K, Shahabuddin, Junaid M, Hakim S. Incidental Papillary Thyroid Micro Carcinomas in Patients Undergone for Thyroidectomy. Med Forum 2019;30(7):38-41.

INTRODUCTION

Thyroid carcinomas are considered as the commonest endocrine carcinoma and constitute about 90% of endocrine malfunctions. Recently, frequencies of incidental thyroid carcinomas are increasing (Askitis, 2013)[1]. Bilateral total excisions and histopathological examinations of thyroid tissue have boosted up thyroid surgery (Sipos,2010, Neuhold, 2011,Londero, 2013)[2,.3,4] Incidental papillary thyroid microcarcinomas have a prevalence of 7.1-16.3%. Incidental tumors are the ones not suspected clinically but are diagnosed in histopathological examination of specimens during thyroidectomy operations (Vasileiadis,2014)[5]. The most common type of incidental thyroid carcinoma is papillary microcarcinoma (Sipos, 2010)[2]. If the tumor is 1cm or smaller, it is known as 'papillary thyroid microcarcinoma'(PTM). Most of the papillary thyroid carcinoma are diagnosed by chance during histopathological examinations. In multinodulargoiter cases (MNG), thyroid carcinoma has incidence of 7.5-13% (Slijepcevic,2015)[6]. The fine needle aspiration cytology has decrease in diagnostic value for malignancy as number of nodules increases in MNG cases, whereas, incidental thyroid carcinoma is quite common in MNG (Neuhold, 2011)[3]. Therefore, total thyroidectomy is recommended for nonmalignant thyroid diseases.

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Received: December, 2018
Accepted: March, 2019
Printed: July, 2019

MATERIALS AND METHODS

The present study comprises of 1000 patients who experiences thyroidectomies during January 2017 to January 2018. They were histopathologically examined at the clinic. The demographics and information of patient was gathered through phone calls and computer records. Gender, age, FNAC diagnoses, preoperative clinical diagnoses, histopathological findings and

operative procedure for the patients were noted. The cases having tumor size more than 1cm and those with suspected or diagnosed malignancy were excluded. Evaluation for histopathological findings was conducted including multifocality, bilaterality, tumor type, tumor size, age, sex, preoperative diagnosis, lymphovascular invasion and thyroid capsule invasion. The follow up period lasts from diagnosis date to last follow up. The patients were given a follow up of 10 months. Postoperative prognostic indices were investigated including metastasis, relapse and survival. Serum thyroid-stimulating hormone (TSH) and Free thyroxin (FT4) levels were assessed to check LT4 dose in 1st and 3rd postoperative months. Thyroglobulin (Tg), Serum TSH, FT4, and anti-thyroglobulin antibody (anti-TgAb) were assessed in the 6th month. Ultrasonography helped in examination of cervical lymph nodes. Serum levels of TG, FT4, TSH and TgAb were examined through annual cervical USG.

RESULTS

Within one year, 1000 thyroidectomies were conducted. Out of 1000 patients, 186 (18.6%) were found with a malignancy. Among these, 6 (3.22%) were found with follicular carcinoma, 5(2.68%) with lymphoma, 4(2.15%) with anaplastic carcinoma, 4(2.15%) with medullary carcinoma, 2(1.07%) with poorly differentiated carcinoma and 165 (88.70%) with papillary carcinoma. Among papillary carcinoma patients, 62 (37.57%) were found with classical papillary carcinoma and 103 (62.42%) were found with papillary microcarcinoma.

Table No.1: Distribution of malignancy

Type of malignancy (n=186)	Number	Percentage (%)
Follicular carcinoma	6	3.22%
Lymphoma	5	2.68%
Anaplastic carcinoma	4	2.15%
Medullary carcinoma	4	2.15%
Poorly differentiated carcinoma	2	1.07%
Papillary carcinoma	165	88.70%

Among 103 papillary microcarcinoma cases, 64 were regarded as benign by FNAC. Incidental papillary thyroid microcarcinoma (IPTM) was present in 40 cases.

Table No.2: Distribution of papillary carcinoma patients

Malignancy n=165	Number	Percentage (%)
Classical papillary carcinoma	62	37.5%
Papillary microcarcinoma	103	62.42%

The patients with IPTM had average age of 42 years with range of 25 to 70 years. It comprised of 34 (85%) females and 6 (15%) male patients. Among 40 IPTM patients, 5 (12.5%) had a prediagnosis of toxic MNG, whereas, 35 (87.5%) had a prediagnosis of nontoxic MNG. In all the cases, total thyroidectomies were performed. The tumor size was found to be 1-10mm among cases with ITPM. Tumor had affiliation with left lobe in 21 (52.5%) cases, with right lobe in 9 (22.5%) cases, multifocal nature in 6 (15%) cases and bilateral nature in 4 (10%) cases. During histopathological examination, cells with nuclear clearing were settled near fibrovascular core.

Immunohistochemical markers were used to stain tumor cells. In all the cases, lymphovascular invasion was absent. Histopathological findings assessed in IPTM cases included follicular adenoma, lymphocytic thyroiditis and MNG. The suppression of TSH was brought about by LT4 in all patients. Radioactive iodine was rendered to patients with thyroid capsule invasion. In follow up, serum levels for TgAb, TG, FT4 and TSH were assessed along with cervical USG. In any of the cases, no relapse or metastasis were recorded.

DISCUSSION

The most frequent kind of malignant thyroid carcinoma is papillary thyroid carcinoma. It is called papillary thyroid microcarcinoma if tumor is 1 cm or smaller (Mantinan, 2012, Gelmini, 2010)[7,9] . In literature the prevalence of IPTM is recorded to be 7.1% to 16.3% (Nanjappa, 2013 Ito, 2007)[8,10]. In the present study, it was found to be 9%. Incidental carcinomas has incidence of 49% to 75.5%. The present study has shown its incidence to be 63%. The ratio of IPTM has increased tremendously in the previous few years, due to increase in total thyroidectomies. Papillary thyroid microcarcinoma is asymptomatic in nature and found incidentally while examining histopathologically for thyroidectomy specimens (Yousuf, 2011, Tezelman, 2009)[11,12]. In the present study, only 64 cases out of 1000 were found to be benign. In accordance with IPTM cases, benign lesions were found to be 26 with MNG cases, 8 with thyroiditis cases and 6 with follicular adenoma cases. In the present study, 103 cases were diagnosed with papillary microcarcinoma, whereas 64 cases of papillary microcarcinoma were diagnosed by preoperative FNAC. The remaining 40 cases were diagnosed incidentally while examining thyroidectomy specimens histopathologically. Majority of the cases of papillary microcarcinoma were skipped by FNAC. This is due to low diagnostic value of FNAC. As many patients consist of MNG and tumors are minute, sampling of area with FNAC is difficult. The same findings were put forward by Senel, 2016 18.

For diagnosing papillary thyroid microcarcinoma, cautious histopathological examination is necessary (Abdelshaheed,2006)[13]. Macroscopic examinations are compulsory to be performed on thyroidectomy specimens due to probability of IPTM (Dunki-Jacobs, 2012).[14] The tumor may be diagnosed macroscopically as a broken white colored area, whereas, it may sometimes be detectable by a microscopic assessment. Multifocality and bilateriality are the most important characteristics of papillary thyroid microcarcinomas (Lombardi, 2010, John,2014).[15,16] The presence of tumor in both lobes or more than one focus in same thyroid lobe is called multifocality (Malandrino 2013)[17]. It is reported to occur at rate of 13-41% (Costamagna,2013)[19]. The present study reports multifocality of 26%. The chances of cancer were found to be 60% in opposite lobe in cases with multifocality. In the preoperative time, it is difficult to determine multifocality in papillary microcarcinoma (Sakorafas, 2007)[20]. The presence of tumor in both the lobes is called bilaterality. According to literature, bilaterality rate is found to be 20-27.5% (El-Foll, 2015)[21]. However, in present study it was found to be 1%, which is quite lower than the reported ones. This variation might have occurred due to use of different diagnostic criteria in various research works.

In papillary carcinoma cases, involvement of lymph node is quite common. Metastasis in regional lymph nodes was recorded to be 30-40%. In papillary thyroid microcarcinoma, low prevalence of nodal metastasis has been reported. The study conducted by Vlassopoulou et al; 2016[24] reported rate of 10.7%, whereas, Wang et al; 2013[23] showed 0% rate for metastasis. The present study was in accordance with the results of Wang et al., as it showed no lymph node involvement in any IPTM cases. Due to high rate of bilaterality and multifocality, total thyroidectomies are preferred for papillary thyroid microcarcinoma (Jagtap, 2018)[22]. The tumor size for IPTM previously reported is smaller than 5mm (Di Donna,2014)[25] . In the present study, mean tumor size was found to be 4.5mm, which is consistent with the previous literature. Primary adjuvant procedures are involved when treating patients with differentiated thyroid carcinoma. However, low rate of recurrence in IPTM cases nullifies need of adjuvant treatment. However, suppression of TSH levels with LT4 treatment is still applied (Shaha, 1998).[26] In case of cervical lymphadenopathy, modified neck dissection or central neck dissection is required (Ito, 2004).[27] As no cervical lymphadenopathy was diagnosed in present study, neck dissection was omitted. In all the cases, total thyroidectomies were performed. In case of tumormultifocality, vascular invasion or lymph node metastasis, adjuvant radioiodine therapy is required. RAI is avoided due to low risk of recurrence. In the present study, 6 cases of thyroid capsule invasion were given treatment of RAI.The IPTM has recurrence rate of 0-5% (Hay,1992).[28] The present study had recurrence and metastasis rate of 0%. It can be concluded that IPTM has high incidence rate due to benign thyroid disease.

CONCLUSION

In diagnosis of papillary thyroid microcarcinoma, FNAC cannot be relied. Thus, detailed histopathological assessment is required. Bilaterality and multifocality are important characteristics of papillary thyroid microcarcinoma. Total thyroidectomy is the preferred method of treatment.

Author's Contribution:

Concept & Design of Study:	Muhammad Tariq
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Data Analysis:	Shahabuddin, Muhammad Junaid, Salman Hakim
Revisiting Critically:	Muhammad Tariq, Jamshed Khan
Final Approval of version:	Muhammad Tariq

Conflict of Interest: The study has no conflict of interest to declare by any author.

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