PATTERNS OF THYROID CANCERS IN ZARIA

AHMED S.A, RAFINDADI A.H, ILIYASU Y., SHEHU S.M

Department of Pathology, Ahmadu Bello University Teaching Hospital Zaria, Nigeria.

Correspondence: **DR AHMED S.A**
Department of Pathology, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria
Sahmednl@yahoo.com

Abstract

Background

Thyroid cancers are not uncommon and frequently affect the middle age population. The frequency of the various histopathological types vary among regions, with follicular carcinoma predominating in iodine-deficient regions. This is the first histopathological review study from this centre, in the recent past.

Materials and Method

This retrospective analysis was based on the review of all histologically diagnosed thyroid cancers in the Pathology Department of the Ahmadu Bello University Teaching Hospital Zaria, between January 1984 and December 2003.

Results

There were 44 cases of thyroid cancer with a male to female ratio of 1:3 and a mean age of 41.7 years. The histopathological types encountered were papillary carcinoma (70.5%), follicular carcinoma (15.9%), and three cases each of medullary and anaplastic carcinomas, respectively.

Conclusion

The study has shown that papillary carcinoma was the predominant histological subtype in Zaria.

Introduction

Thyroid cancers are not uncommon and account for one per cent of all malignant tumours worldwide. Malignant thyroid tumours affect mainly the adult population, however, Africans and Asians tend to present at a younger age than the Europeans and Americans and females are more frequently affected.[1]

Papillary carcinoma is acknowledged to be the commonest histologic type of primary malignant thyroid tumour worldwide.[2] In non-iodine deficient areas, follicular carcinoma constitutes one-third of all thyroid malignancies while in iodine deficient areas, however, the relative incidence reaches over one-half of all thyroid cancers.[3] Several studies from Kenya and Nigeria reported follicular carcinoma being more common.[4-9] However, some studies from Zaria, Ibadan and Enugu acknowledged papillary carcinoma to be more common.[10-12]

This study aims is meant to update available information by reviewing the histopathological pattern of thyroid cancers from this centre.

Materials and Method

This retrospective analysis was based on all histologically diagnosed thyroid cancers in the Pathology Department of the Ahmadu Bello University Teaching Hospital Zaria, between January 1984 and December 2003 (20 years). This hospital, which is based in North Central Nigeria, is a referral centre for hospitals in Kaduna, Kano, Zamfara, Katsina, Jigawa and Niger states.

All cases histologically diagnosed as thyroid cancers were extracted from the departmental records. These cases formed the study group. The request cards sent by the clinicians, the relevant slides stained with routine Haematoxylin and Eosin were retrieved. Where the slides were missing, tissue blocks were retrieved and fresh sections made. Special stains like Congo Red for Amyloid, Reticulin to highlight capsular and vascular invasion were applied to freshly cut sections from the blocks, where necessary.

The slides were reviewed by the authors and the cases classified using the revised

WHO Histological Classification of Thyroid Tumours.[13] Clinical details, age and sex of patient are amongst the information retrieved from the request cards.

Analysis of collected data was in the form of frequency tables and figures.

Results

Forty four cases of thyroid cancers were reviewed during the study period. The age and sex distribution of malignant thyroid neoplasms showed a male to female ratio of 1:3. Thirty five (79.6%) cases of malignant thyroid neoplasms occurred in the third to sixth decades with a peak in the fifth decade, and a mean age of 41.7 years (Table I).

The histopathological subtypes seen were papillary carcinoma (70.5%), follicular carcinoma (15.9%), while anaplastic and medullary carcinomas accounted for 6.8% each (Table II).

Thirty one cases of papillary carcinoma were seen. Their age range was from 15 60 years, the mean age was 41.5 years with a male to female ratio of 1: 4.2. Seven cases were diagnosed as follicular carcinoma with a mean age of 38.8 years, while the male to female ratio was 1: 1.3. There were three cases each of medullary and anaplastic carcinoma respectively.

Table I: Age and sex distribution thyroid cancers in Zaria

Age(Yrs)	Male	Female	Total (%)
0 - 9	0	0	0(0.0)
10 - 19	0	3	3(6.8)
20 - 29	2	5	7(15.9)
30 - 39	2	6	8(18.2)
40 - 49	2	9	11(25.0)
50 - 59	3	6	9(20.5)
60 - 69	2	3	5(11.4)
Not stated	0	1	1(2.3)
Total (%)	**11**	**33**	**44(100.0)**

Table II: Frequency distribution of histopathological types of thyroid cancers

Histopathological Types	Frequency (%)
Papillary Carcinoma	31(70.5)
Follicular Carcinoma	7(15.9)
Anaplastic Carcinoma	3(6.8)
Medullary Carcinoma	3(6.8)
Total	44(100.0)

Discussion

The forty four thyroid cancer cases observed in our study formed 0.4% of all malignant tumours observed during the study period and had a male to female ratio of 1:3. This is similar to 1:4 observed by Lawal et al[14] in Ile Ife and 1:2 noted by Thomas and Ogunbiyi in Ibadan.[12] Male to female ratio of 1:4.5 was also observed in South Africa,[15] and 1:5.5 in Sheffield.[16] The mean age of 41.7 years we observed is also similar to the previous Ibadan[12] and Ile Ife[14] studies who reported the mean age of 40 years and 43.7 ± 14.7 years, respectively. The predominant malignant histopathological thyroid neoplasm encountered in this study was papillary carcinoma, which accounted for 70.5%, a previous study from our centre by Kwajah et al[10] also reported 67% of malignant thyroid tumours. This agrees with studies by Thomas and Ogunbiyi[12] in Ibadan (45.3%), Anidi et al[11] in Enugu (44.9%), Rakesh[2] in India (64%), Carcangiu et al[17] (80%) from the United States and Young et al[16] from the United Kingdom

(46.7%). However some Nigerian and East African studies found follicular carcinoma to be the predominant histological type. Many of these studies are clinico-pathological Edino et al[8] (70%) in Kano, Olurin et al[4] (60%) in Ibadan, Otoh et al[18] (58.8%) in Maiduguri, Oluwasanmi et al[19] (53.9%) in Ibadan, Amabibi et al[5] (53.9%) in Lagos, and Amusa et al[20] and Lawal et al[14] (44.2% and 69.4% respectively) in Ile Ife. Others were histopathological studies Lagos,[21] (48.3%), Gitau[9] (55%) and Kungu[6] (50.7%) from Kenya in East Africa. These differences may be due to several factors the clinico-pathological studies may have to do with patient selection; while it is of note that follicular carcinoma predominate in iodine deficient regions, however, Zaria is not a goiter endemic zone and the impact of salt iodization program reflects in most of the studies above with relative increase in cases of papillary carcinoma.

The mean age of papillary carcinoma seen in this study was 41.5 years and is comparable with a mean of 41.7 years seen in Ibadan and 40 years in the United States.[12, 22] However, Oluwasanmi et al[19] in Ibadan and Young et al[16] in Sheffield found the peak to be in the third decade; while Kungu[6] and Gitau[9] in Kenya, and Anidi et al[11] in Enugu found the peak age to be in the fourth decade. Papillary carcinoma is the most common thyroid cancer in children and young adults and is related to irradiation.[2] This retrospective study does not allow for the determination of irradiation history or associated syndromes such as Gardner syndrome and Cowden's disease. The male to female ratio of 1:4.2 seen in our study is comparable to those found in East Africa,[6, 9] Ile Ife,[14] and Enugu,[11] all noted a female preponderance. The diagnosis of papillary carcinoma requires the presence and/or nuclear features ground glass (Orphan Annie eye) appearance, nuclear crowding, nuclear pseudoinclusion, nuclear grooving and the presence of psammoma bodies.

Our cases of follicular carcinoma had a broad age range of 15 60 years which is similar to 12 85 years reported by Thomas and Ogunbiyi[12] in Ibadan and 10 70 years by Gitau[9] in Kenya. The age range of 32 43 years observed by Oluwasanmi et al[19] in Ibadan may be due to patient selection since the study is clinico-pathological. The peak age incidence of follicular carcinoma in our study was seen in the fourth decade and is similar to those found in other parts of the world.[6, 9, 11, 12, 16] The male to female ratio of 1:1.3 which we observed in cases of follicular carcinoma was the narrowest observed among all the various histopathological types. This may be due the small number (seven cases) encountered in this study. Female preponderance has also been noted by other workers.[2, 6, 9, 11, 12] Follicular adenoma may be confused with follicular carcinoma, therefore, demonstration (with or without Reticulin stain) of vascular and/or unequivocal capsular invasion is necessary for the diagnosis of follicular carcinoma.[23] Our study showed that vascular invasion is the most common mode of invasion. Capsular invasion and both the capsular and vascular invasion accounted for 28.6% each.

Medullary carcinoma was seen from a male and two females. Our small number of these cases does not allow for reasonable sex ratio comparison. Kungu[6] in Kenya observed among their medullary carcinoma cases a male to female ratio of 1:1.8 while a study from Ibadan[12] had a male preponderance of 1.3:1. Medullary carcinomas tend to occur in the fourth and fifth decade as reported by some workers.[6, 12] Studies from Enugu,[11] Ibadan[4] and Kenya[9] did not see cases of medullary carcinoma. This malignancy is a tumour arising from the C-cells of the thyroid gland characterized by clusters of round to oval epithelial cells disposed in an amyloid-rich Congo red positive stroma. Familial cases are associated with MEN's (Multiple Endocrine Neoplasia) syndrome. Being a retrospective study, it was not possible to determine which form (sporadic or familial) is predominant.

Anaplastic carcinoma was seen from a male and two females. The small number of cases does not allow for reasonable sex ratio comparison. Male to female ratio of 1:2 was reported by Gitau[9] from East Africa and equal sex distribution by Thomas and Ogunbiyi[12] and a slight male preponderance of 1.2:1 reported by Kungu.[6] Anaplastic carcinomas occur in older patients in sixth decades in Africans,[6, 9, 12] while in Europe[16] such cases had

a peak in the seventh decade. This may be explained by the fact that cancers has been observed to occur a decade earlier among Africans than in Europeans.[1] The diagnosis was based on the presence of undifferentiated pleomorphic malignant cells arranged in sheets, having vesicular nuclei and prominent nucleoli. Three patterns have been described squamoid, spindle cell, and giant cell. Combination of these patterns was observed in this study one case of spindle cell and squamoid pattern and two cases of spindle cell and giant cell patterns.

In conclusion, this study showed that papillary carcinoma was the most common thyroid malignancy in Zaria and rare thyroid tumours teratomas, medullary carcinoma and anaplastic carcinoma were observed in our study.

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