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Epidemiology of Goiter and Benign Tumors of the Thyroid Gland in Albania

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ABSTRACT

Aim: The aim of this study was to describe the demographic characteristics and disease patterns among patients with thyroid nodular abnormalities (goiter) and benign tumors of the thyroid gland in Albania, a transitional country in South Eastern Europe. **Methods:** Our study included all patients diagnosed with goiter and/or benign tumors of the thyroid gland who were hospitalized at the University Hospital Center (UHC) "Mother Teresa" in Tirana between 2004 and 2012 (N=2258). All patients underwent the same examination and interviewing procedures. Demographic characteristics included gender, age, and place of residence. Binary logistic regression was used to compare the demographic characteristics between patients with benign tumors of the thyroid gland and those with goiter. **Results:** Overall, there were 2204 patients with goiter and 54 patients with benign tumors of the thyroid gland hospitalized at UHC over the period 2004-2012. There was no evidence of statistically significant differences in demographic characteristics (age, gender, or place of residence) between patients with benign tumors of the thyroid gland and those with goiter. **Conclusions:** Our study provides useful evidence on the epidemiology of benign tumors of the thyroid gland and the thyroid nodular abnormalities (goiter) in the Albanian population. Future studies in Albania should assess the main determinants of thyroid gland disorders and compare them with findings pertinent to other similar populations.

Key words: benign tumors, goiter, thyroid gland, thyroid nodular abnormalities.

1. INTRODUCTION

Iodine deficiency leads to a range of health consequences commonly considered as iodine deficiency disorders (IDDs) (1, 2). IDD is deemed as one of the major public health problems in many parts of the world (1, 2, 3). In particular, thyroid nodular abnormalities (or, goiter) constitute one of the main IDDs. Indeed, it is estimated that over 90% of the cases with goiter are caused by iodine deficiency conditions (4, 5).

On the other hand, benign tumors of the thyroid gland (alias, thyroid adenoma) consist mainly of follicular adenomas, which are described as "cold", "warm", or "hot" depending on their level of function (6). Benign thyroid disease is much more common in females (7, 8), and this fact has been suggested to lead to a higher rate of investigation and diagnosis of incidental papillary thyroid carcinoma (8). It should be noted that the presence of benign thyroid nodules has been associated with an increased incidence of thyroid neoplasia (8). Nonetheless, there is no reported association between the presence of either hyperthyroid Graves' disease or autoimmune hypothyroidism and thyroid neoplasia (9, 10).

The information about thyroid nodular abnormalities or benign tumors of the thyroid gland is scarce for transitional countries of the Western Balkans such Albania and Kosovo. As a matter of fact, to date, there are few scientific rigorous reports on this matter. In this framework, the aim of this study was to

describe the demographic characteristics and disease patterns among patients with thyroid nodular abnormalities (goiter) and benign tumors of the thyroid gland in Albania, a transitional country in South Eastern Europe.

2. METHODS

A cross-sectional study was conducted in Albania covering the period 2004-2012. All patients diagnosed with goiter and/or benign tumors of the thyroid gland who were hospitalized at the University Hospital Center "Mother Teresa" in Tirana between 2004 and 2012 were included in this study. Overall, for the period 2004-2012 (inclusive) there were 2204 hospitalized patients with the aforementioned diagnoses. All patients underwent the same examination and interviewing procedures. Demographic characteristics included gender, age, and place of residence. Binary logistic regression was used to compare the demographic characteristics between patients with benign tumors of the thyroid gland and those with thyroid nodular abnormalities (goiter). Unadjusted (crude) odds ratios (ORs), their respective 95% confidence intervals (95% CIs) and p-values were calculated. A p-value of ≤ 0.05 was considered as statistically significant.

3. RESULTS

Table 1 presents the distribution of demographic characteristics and disease patterns among patients with thyroid nodu-

Variable	Male (N=305)	Female (N=1899)	Overall (N=2204)
Age (years)	49.3±12.3 [†]	46.0±12.6	46.4±12.6
Age-group:			
<35 years	44 (14.4) [†]	411 (21.6)	455 (20.6)
35-54 years	147 (48.2)	1005 (52.9)	1152 (52.3)
≥55 years	114 (37.4)	483 (25.4)	597 (27.1)
Residence:			
Tirana	124 (40.7)	661 (34.8)	785 (35.6)
Other districts	181 (59.3)	1238 (65.2)	1419 (64.4)
Year:			
2004-2008	131 (43.0)	758 (39.9)	889 (40.3)
2009-2012	174 (57.0)	1141 (60.1)	1315 (59.7)
Diagnosis:			
Mono-nodular goiter	98 (32.1)	407 (21.4)	505 (22.9)
Multi-nodular goiter	73 (24.0)	319 (17.0)	392 (17.8)
Other	134 (43.9)	1173 (61.8)	1307 (59.3)

Table 1. Distribution of demographic characteristics and disease patterns among patients with thyroid nodular abnormalities (goiter) in Albania, 2004-2012. * Mean values ± standard deviations. † Numbers and column percentages (in parentheses).

Variable	N=54
Age (years)	49.8±12.4 [*]
Age-group:	
<35 years	8 (14.8) [†]
35-54 years	26 (48.1)
≥55 years	20 (37.0)
Gender:	
Male	7 (13.0)
Female	47 (87.0)
Residence:	
Tirana	21 (38.9)
Other districts	33 (61.1)
Year:	
2004-2008	33 (38.9)
2009-2012	21 (61.1)
Diagnosis:	
Toxic adenoma sinister	21 (38.9)
Toxic adenoma dexter	24 (44.4)
Other benign tumors	9 (16.7)

Table 2. Distribution of demographic characteristics and disease patterns among patients with thyroid benign tumors in Albania, 2004-2012. * Mean values ± standard deviations. † Numbers and column percentages (in parentheses).

Variable	N	OR [*]	95%CI	P
Age (years)	2258	1.02	0.99-1.05	0.093
Age-group:				0.392 (2)[†]
<35 years	463	1.00	reference	0.721
35-54 years	1178	1.19	0.47-3.00	0.242
≥55 years	617	1.78	0.68-4.66	-
Gender:				
Male	312	0.53	0.16-1.75	0.299
Female	1946	1.00	reference	
Residence:				
Tirana	806	0.97	0.46-1.39	0.53
Other districts	1452	1.00	reference	

Table 3. Comparison of demographic characteristics between patients with thyroid benign tumors and patients with thyroid nodular abnormalities (goiter). * Odds ratios (ORs): thyroid benign tumors vs. thyroid nodular abnormalities (goiter). † Overall p-value and degrees of freedom (in parentheses).

lar abnormalities (goiter). Mean age in the overall sample of patients with goiter (N=2204) was 46.4±12.6 years. Females were somehow younger than males (46 years vs. 49 years, respectively). Overall, 785 (35.6%) of the patients were from Tirana

compared with 1419 (64.4%) of the patients who were from other districts of Albania. Most of the patients (about 59%) were diagnosed during the period 2009-2012. The mono-nodular goiter included 23% of the patients, the multi-nodular goiter 18%, whereas 59% of the patients exhibited other diagnoses of the thyroid gland.

Table 2 presents the distribution of demographic characteristics and disease patterns among patients with thyroid benign tumors. Mean age in the overall sample of patients with benign tumors (N=54) was 49.8±12.4 years. There were only 7 males (13%) compared with 47 females (87%). Overall, 21 (38.9%) of the patients were from Tirana compared with 33 (61.1%) of the patients who were from other districts of Albania. Similar to the goiter, most of the patients with benign tumors (about 61%) were diagnosed over the period 2009-2012. The toxic adenoma sinister included 39% of the patients with tumors, the toxic adenoma dexter included 44%, whereas 51% of the patients had other benign tumors of the thyroid gland.

The comparison of demographic characteristics between patients with goiter and those with thyroid benign tumors is presented in table 3. There was evidence of a borderline statistically significant difference between the two groups when age was treated as a numerical variable: patients with benign tumors were older than those with goiter (OR=1.02, 95%CI=0.99-1.05, P=0.093). However, there was no evidence of a statistically significant difference between the two groups of the patients when age was introduced into the logistic models as a categorical term (overall P=0.392). Furthermore, there were no significant gender differences (OR=0.53, 95%CI=0.16-1.75, P=0.299). Similarly, there were no significant differences in the place of residence between patients with benign tumors and those with goiter (OR=0.97, 95%CI=0.46-1.39, P=0.53).

4. DISCUSSION

Our study informs about the epidemiology of goiter and benign tumors of the thyroid gland in Albania, a post-communist country in the Western Balkans. This is one of the few reports on this matter from this transitional population.

Overall, there were no statistically significant differences in the distribution of demographic characteristics (age, gender and place of residence) between patients with benign tumors of the thyroid gland and those with thyroid nodular abnormalities (goiter).

As shown previously, many regions of Albania are currently in a transition phase from iodine deficiency to iodine sufficiency (11, 12). Nevertheless, in order to achieve a successful elimination of IDD in Albania, there is a need to enlarge and expand all the activities for ensuring a sustainable consumption of intensified awareness activities at a population level and an appropriate monitoring and evaluation system, similar to the recommendations pertinent to other countries (3).

Our study may have some limitations. We included in our analysis all the hospitalized cases with goiter or benign tumors of the thyroid gland from 2004 to 2012. Our study population had a reasonable size and represented all the cases with these conditions in the Albanian population. Therefore, on the face of it, there was no evidence of selection bias in our study population. Furthermore, the diagnosis criteria of goiter or benign tumors of the thyroid gland were stable over time. In addition, there seems to be no reason for differential recording of the

demographic characteristics of our study participants for the entire period under investigation.

5. CONCLUSION

Our study provides useful evidence on the epidemiology of benign tumors of the thyroid gland and the thyroid nodular abnormalities (goiter) in the Albanian population – an under-researched country which is in the midst of a rapid process of political and socioeconomic transition. Future studies in Albania should assess the main determinants of thyroid gland disorders and compare them with findings pertinent to other similar populations.

CONFLICT OF INTEREST: NONE DECLARED.

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