THYROID DISEASE RATES/NATURE IN TURKESTANIANS LIVING IN TURKEY: IMPACT OF ETHNICITY ON DISEASES

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Abstract
Thyroid diseases are global health problems with varying prevalence in different regions and societies of the world. Here, it was aimed to screen Turkestanian people living in Turkey for thyroid pathologies and point out the impact of ethnicity on disease nature. Randomly chosen 60 patients with Turkestan origin living in Turkey and 33 Turkish patients as control group were included in the study. Age, gender, nationality and co-morbidities were recorded. Thyroid disease parameters were tested. Results were analyzed using SPSS. There was no statistically significant difference for age, gender or co-morbid diseases between the groups. fT4 level and pathological USG rates were statistically significantly lower in Turkestan group when compared to control group. There was no statistically significant difference between groups for eu/hypo/hyperthyroid states. Ethnicity is an important variable and determinant of diseases including thyroid pathologies.
Keywords: Thyroid pathologies, ethnicity, minority health, public health.

TÜRKİYE'DE YAŞAYAN TÜRKİSTANLILARDA TİROİD PATOLOJİSİ ORANLARI/DOĞASI: ETNİSİTENİN HASTALIKLAR ÜZERİNE ETKİSİ
Tiroid hastalıkları dünyanın farklı bölgelerinde ve toplumlarında değişken prevalans gösteren global sağlık sorunlarıdır. Burda; Türkiye'de yaşayan Türkistan kökenli kişileri tiroid patolojisi açısından taramak ve etnisitenin hastalık doğası üzerine etkisine dikkat çekmek amaçlanmıştır.
Çalışmaya Türkiye'de yaşayan ve random seçilen 60 Türkistan kökenli hasta ve kontrol grubu olarak 33 Türk hasta alındı. Yaş, cinsiyet ve ko-morbiditeleri kaydedildi. Tiroid hastalık parametreleri tarandı. Sonuçlar SPSS ile analiz edildi. Gruplar arasında yaş, cinsiyet ve ko-morbiditeler açısında fark bulunmadı. Kontrol grubuyla karşılaştırıldığında Türkistan grubunda fT4 düzeyi ve patolojik tiroid USG oranı anlamlı şekilde düşüktü. Etnisite tiroid patolojileri dahil hastalıklar için önemli bir değişken ve belirleyicidir.
Anahtar kelimeler: Tiroid hastalıkları, etnisite, azınlık sağlığı, halk sağlığı.

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Introduction

The thyroid gland secrets thyroid hormone which regulates a wide range of physiological functions like growth, metabolism and energy homeostasis. Thyroid diseases are estimated to affect >5% of individuals during their lifetime (1). Subclinical abnormalities are also common. Thyroid disorders are characterized by (tissue) euthyroidism (Euthyroid goiter, tumors, thyroiditis), hyperthyroidism or hypothyroidism. Screening methods include blood tests of thyroid-stimulating hormone (TSH), free thyroxine (fT4), free triiodothyronine (fT3), anti-thyroid peroxidase antibodies (antiTPO), anti-thyroglobulin antibodies (antiTG) and thyroid ultrasound (US) (2).

In this study; it was aimed to screen Turkestanian people living in Turkey for thyroid pathologies to search for any differences from Turkish people and to discuss those differences using the data about Turkestanians living in their country of origin and point out the impact of ethnicity on disease nature.

Material and Method

This was an observational, case-control study. The study was conducted in Zeytinburnu region in Istanbul where immigrants from Turkestan (West Turkestan: Kazakhstan, Uzbekistan, the Kyrgyz Republic, Tajikistan, Turkmenistan and East Turkestan: Uigurs) are mostly located. Randomly chosen 60 patients with Turkestan origin living in Turkey for at least for the last 10 years and who were seen with any reason in the first quarter of the year in our outpatient clinic located in Zeytinburnu region and as control group; 33 randomly chosen Turkish patients living in the same area were included in the study. Age, gender, nationality and co-morbidities were recorded. Blood samples were drawn from all included patients for measurement of fT4, TSH, anti-TPO and anti-TG levels. Thyroid ultrasound was performed and the findings were grouped as normal and pathological (nodules, thyroiditis, any kind of heterogenity). According to international guidelines, all thyroid function test results were categorized as euthyroid, hypothyroid and hyperthyroid including the patients who had thyroid pathologies as co-morbidities and are on medication for that. The results were recorded and evaluated using SPSS 15.0 for Windows statistical analysis method.

Ethics committee approval was received for this study from the Ethics Committee of Istanbul Training and Research Hospital. All participants provided verbal informed consent. All procedures performed in the study were in accordance with the 1964 Helsinki Declaration.

Statistical Analyses

Statistical analysis was performed using SPSS 15.0 for Windows program. Descriptive statistics were reported as number and percentage for categorical variables and as mean, standard deviation, minimum, maximum and median for continuous variables. When the continuous variables were distributing normally, in comparison of more than 2 independent groups Student-t test, if those groups were not distributing normally, Mann Whitney U test was performed. The ratios of categorical variables between groups were tested with Chi Square test. The statistical alpha significance level was regarded as $p<0.05$.

Results

The 51 (85%) female, 9 (15%) male, totally 60 patients with Turkestan origin living in Turkey as study group and 28 (85%) female, 5 (15%) male, totally 33 Turkish patients as control group were included in the study. Mean age of Turkestan group was 47.1±15.2 years and the control group was 45.9±14.2 years. The results for all evaluated parameters are summarized in Table 1. There was no statistically significant difference for age or gender between the groups (p=0,724 p=1,000). There was no statistically significant difference for co-morbid diseases. In thyroid function evaluation, fT4 level of Turkestan group was statistically significantly lower than the control group (Figure 1). Control group's pathological USG rate was statistically significantly higher than Turkestan group (p=0,018). There was no statistically significant difference between groups for eu/hypo/hyperthyroid states (Table 2).

Table 1: Comparison of evaluated parameters for Turkestan and the control groups

		Turkestan Group	Control Group	p
Age		47,1±15,2 / 17-78	45,9±14,2 / 19-70	0,724
Gender	Female	51 (85,0)	28 (84,8)	1,000
	Male	9 (15,0)	5 (15,2)	
Comorbid diseases	HT	7 (16,7)	11 (33,3)	0,093
	DM	10 (23,8)	6 (18,2)	0,555
	Hypothyroidism	2 (4,8)	5 (15,2)	0,229
	Hyperthyroidism	1 (2,4)	0 (0,0)	1,000
	CRF	1 (2,4)	0 (0,0)	1,000
fT4 (ng/dl)		1,00±0,19 / 0,62-1,56	1,11±0,13 / 0,8-1,46	**0,002**
TSH (mIU/L)		2,70±1,82 / 0,1-7,8	2,60±1,75 / 0,44-8,4	0,739
ATPO	Negative	46 (76,6)	21 (63,6)	0,350
	Positive	14 (23,4)	12 (34,4)	
ATG	Negative	45 (75,0)	22 (67,7)	0,500
	Positive	15 (25,0)	11 (32,3)	

Diabetes Mellitus (DM), hypertension (HT), chronic renal failure (CRF).

Table 2: Thyroidisim states and USG findings for Turkestan and the control groups

	Turkestan Group		Control Group		
	n	**%**	**n**	**%**	**p**
Hyperthyroidism	2	3,3	0	0,0	
Hypothyroidism	6	10,0	2	6,1	0,618
Euthyroidism	52	86,7	31	93,9	
Pathological USG	9	15,0	12	36,4	**0,018**
Normal USG	51	85,0	21	63,6	

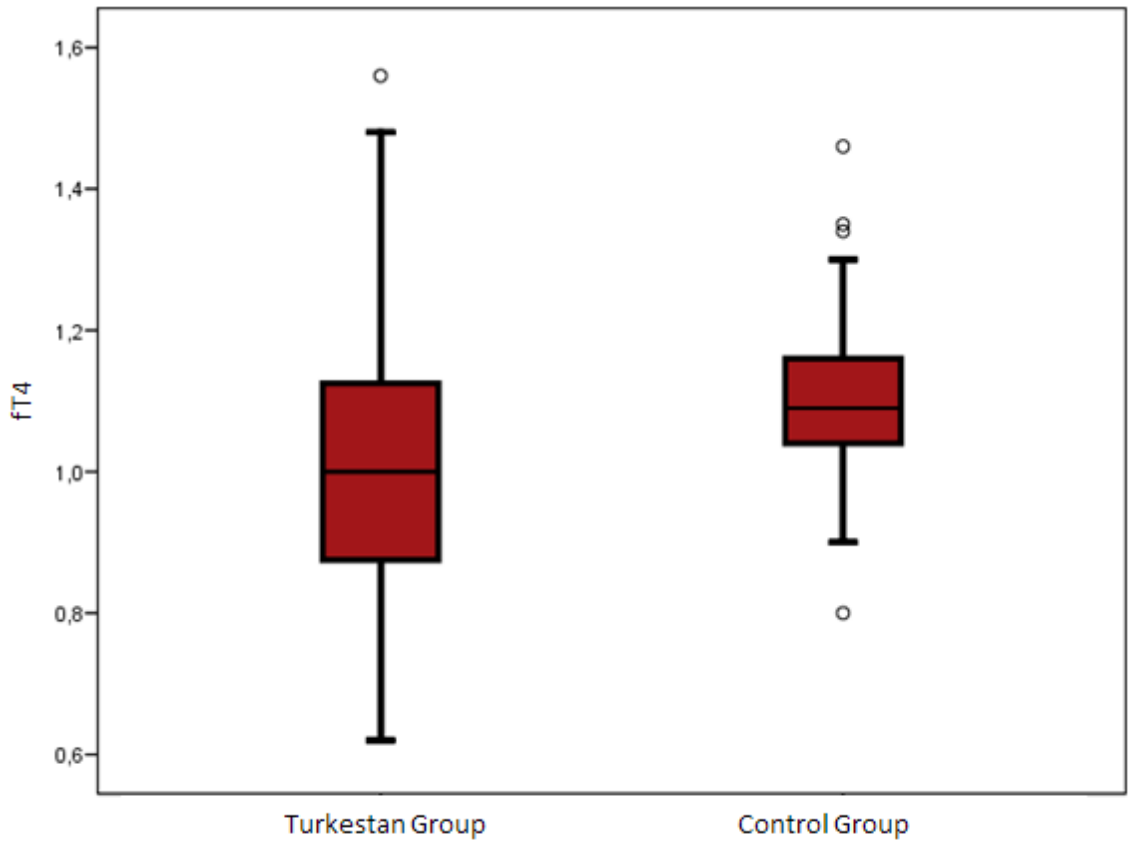

Figure 1: fT4 level comparison for Turkestan and the Control groups

Discussion

Almost one-third of the world's population lives in areas of iodine deficiency. The prevalence of goitre in areas of severe iodine deficiency can be as high as 80%. Populations at particular risk are mostly in South-East Asia, Latin America and Central Africa (3). Both Turkey and Turkestan are areas that have moderate iodine deficiency (20–49 µg/L) (4).

In a study performed in Turkey; Turkish subjects were found to be moderately iodine deficient and had higher intakes of the iodide uptake inhibitors that could have an impact on the thyroid (5). In their study; Hergenc et.al, presented hypo and hyperthyroidism rate in Turkey as 4-5% (6).

Population-based or ethnicity-specific reference ranges might change the diagnosis of thyroid disease for people living abroad but it's a tricky situation to choose, as environmental changes are expected to have occurred after a certain amount of time (7).

Extrapolated prevalence of thyroid disorders in Turkey is 5,065,729 and 1,113,507 in Kazakhstan, 515,555 in Tajikistan and 1,941,942 in Uzbekistan as samples of central Asian countries (8).

UNICEF, WHO and ICDDD (International Council for Control of Iodine Deficiency Disorders) recommend government's universal salt iodinization program in order to eliminate iodine deficiency. In Turkey, production of iodized table salt became mandatory in

1998 and iodine deficiency started to decrease (58% in 1997-27.8 % in 2008). Similarly; in Kyrgyzstan, there is an ongoing salt iodization strategy to prevent goitre and cretenism (9). Iodine deficiency has been decreasing worldwide accordingly after these global iodinization programmes (10). According to global iodine map 2014-2015, Turkey has adequate iodine intake and Turkestanian countries have mild iodine deficiency (11). In our study; Turkestanian group had lower fT4 levels than Turkish group supporting this finding.

Autoimmune thyroiditis is another common thyroid problem with a global prevalence of 0.8%. Another very common clinical problem is nodular thyroid disease (NTD) with an incidence of 0.1% and a prevalence of 50%–70% by sonographic examination (12). In our study, Turkish participants had significantly higher rates of pathological thyroid US findings than Turkestan group. Variability in disease and in the determinants of disease occur between ethnic groups. Minority populations often have higher rates of chronic diseases. The nature and extent of adaptation differs between individuals (13). The differences in disease incidence by race/ethnicity may be due to different environmental exposures, genetics factors that affect disease prevalence or combination of both (14).

Genetic characteristics are affected by founder populations, migration, marriage patterns and other factors. Sociocultural/socioecomical and ecologic factors are also important determinants. Individuals migrated to other societies tend to preserve their traditional behavioral patterns related to health but sociocultural factors of ethnic groups may differ rapidly. Thus; it's difficult to distinguish ethnicity as a disease determinant than other determinants (15).

Ethnicity is an important variable in health care planning and may provide guidance to screening, intervention and prevention programmes of disease which might help to target risk burdens specific to these populations, improve outcomes, decrease health costs and contribute to public health (12,16).

Conclusion:

Although thyroid disease rates are not found to be different from local population in Turkestanian people living in Turkey, Turkestanians should be screened for thyroid function tests as their fT4 levels are low. These findings would contribute to general health status of this spesific population which is a significant part of Turkish society presently and must be translated to other societies and diseases in future for further contribution.

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