

Association of History of Psychological Problems, Diseases and Smoking with Hypothyroidism in Hamedan- Iran

Ravanbakhsh L and Ahmadi R

Abstract—Hypothyroidism is a common endocrine disorder that mainly affects women and the elderly. Epidemiology of hypothyroidism is influenced by factors such as nutrition, genetic predisposition and history of stressful life. The aim of this study was to determine the association between history of psychological problems, negative life events, diseases and smoking with hypothyroidism occurrence in Hamedan, Iran. Individual questionnaire and face to face interview were used to collect the data. The data was analyzed using Chi-square test. History of hypothyroidism was observed in 9% of close relatives of patients with hypothyroidism: in sister (52.4%), brother (8.2%), mother (9.8%), father (11.4%) and offspring (18.4%) of patients with hypothyroidism. History of a severe disease was observed in 9% of patients with hypothyroidism: cardiovascular diseases (2.5%), kidney diseases (2.5%), diabetes (2%) and hormonal dysfunction. History of psychological problems and negative life events were among the important causes associated with hypothyroidism epidemiology in Hamedan – Iran.

Index Terms—Diabetes, Psychological Problems, Negative life events, Eslamshahr, Iran.

I. INTRODUCTION

Hypothyroidism, is a thyroid disorder accompanied by serum thyroid hormone reduction when thyroxin T4, the main thyroid hormone, reduced, it is followed by disruption of a negative-feedback auto regulatory mechanism on pituitary gland and subsequent thyroid stimulating hormone (TSH) which is released into the blood circulation to stimulate the thyroid gland to produce enough thyroid hormone to compensate for the body hormone requirements. Hypothyroidism is a condition in which the body lacks sufficient thyroid hormone. The estimates vary, but approximately 10 million Americans have this common medical condition. The main cause of hypothyroidism is inflammation of the thyroid gland. Hypothyroidism is a common condition with potentially devastating health consequences that affect all populations worldwide. Iodine nutrition is a key determinant of thyroid disease risk; however, other factors, such as ageing, smoking status, genetic susceptibility, ethnicity, endocrine disruptors and the advent of novel therapeutics, including

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immune checkpoint inhibitors, also influence thyroid disease epidemiology. Hypothyroidism is also a common endocrine disorder that mainly affects women and the elderly. Hypothyroidism is associated with depression and poor quality of life. [1]-[6]

This study aims to investigate the association of history of hypothyroidism in close relatives, diseases, puberty disorders, psychological problems and negative life events with hypothyroidism occurrence in Hamedan, Iran.

II. MATERIAL AND METHODS

Data were collected from records of patients referred to health centers and hospitals in Hamedan - Iran. Individual questionnaire and also face to face interview were used to collect the data. Information including history of hypothyroidism in close relatives, diseases, puberty disorders, psychological problems and negative life events were collected and analyzed using descriptive statistics and Chi-square test.

III. RESULTS

History of hypothyroidism was observed in 9% of close relatives of patients with hypothyroidism: in sister (52.4%), brother (8.2%), mother (9.8%), father (11.4%) and offspring (18.4%) of patients with hypothyroidism (figure I).

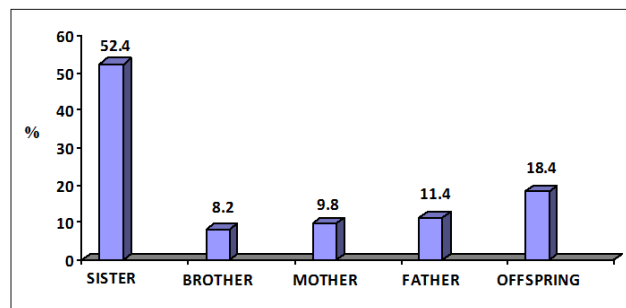


Fig. 1: History of hypothyroidism in close relatives of patients with hypothyroidism

History of a serious disease was observed in 9% of patients with hypothyroidism: cardiovascular diseases (2.5%), kidney diseases (2.5%), diabetes (2%) and hormonal dysfunction (2%) (Figure II).

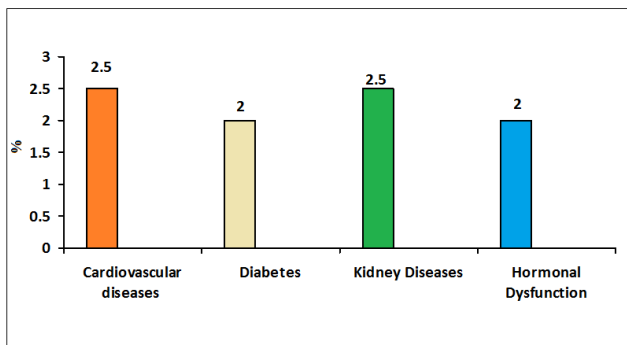


Fig. 2: History of diseases in patients with hypothyroidism
Of all patients with hypothyroidism (680 patients), history of smoking was observed in 98 patients (figure II).

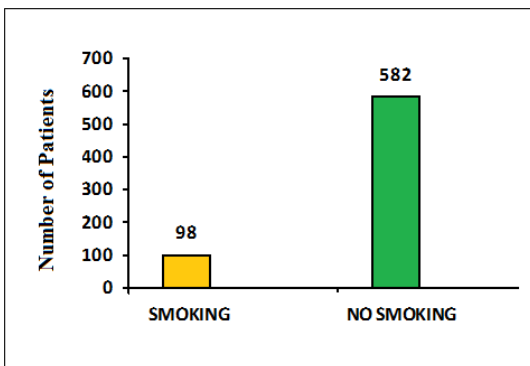


Fig. 3: History of smoking in patients with hypothyroidism

165 patients also had history of psychological problem (stress, anxiety, depression and ...) (41% of total patients), and 182 patients had history of negative life events (spouse drug addiction, severe disease, and ...) (45% of total patients) (Figure IV).

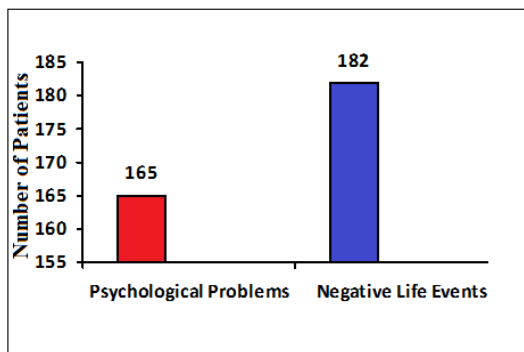


Fig. 4: History of psychological problems and negative life events in patients with hypothyroidism

IV. DISCUSSION

Our findings indicated that history of psychological problems and negative life events were among the important causes associated with hypothyroidism epidemiology in Hamedan – Iran. However, history of serious diseases was not a common risk factor for hypothyroidism occurrence. History of hypothyroidism was also observed only in 9% of close relatives.

Research has indicated that hypothyroidism has a high prevalence among Iranian population. [7], [8] Previous studies

have shown that iodine nutrition, ageing, smoking status, genetic susceptibility and ethnicity influence thyroid disease epidemiology. [1] It has also been shown that negative life events influence thyroid disorders epidemiology. [9]-[11]

There is also association between stressful life and thyroid disorders occurrence. [12] However, in contrast to our findings there are studies showing that there is no association between recently experienced stressful life events, daily hassles or mood and the presence of thyroid peroxidase autoantibodies. [17]

Our findings indicated that history of smoking was observed in 14% of patients with hypothyroidism. The previous studies have shown that smoking is highly associated with thyroid disorders. [14]-[17]

Further research are required to clarify the association between stressful life, negative life events, psychological problems and smoking with hypothyroidism particularly in cellular and molecular level.

V. CONCLUSION

History of psychological problems and negative life events were among the important causes associated with hypothyroidism epidemiology in Hamedan – Iran.

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REFERENCES

- [1] Taylor PN, Albrecht D, Scholz A, Gutierrez-Buey G, Lazarus JH, Dayan CM, Okosieme OE. Global epidemiology of hyperthyroidism and hypothyroidism. *Nature Reviews Endocrinology*. 2018 Mar 23. <https://doi.org/10.1038/nrendo.2018.18>
- [2] Smith DW, Blizzard RM, Wilkins L. The mental prognosis in hypothyroidism of infancy and childhood: A review of 128 cases. *Pediatrics*. 1957 Jun 1;19(6):1011-22.
- [3] Haggerty Jr JJ, Garbutt JC, Evans DL, Golden RN, Pedersen C, Simon JS, Nemeroff CB. Subclinical hypothyroidism: a review of neuropsychiatric aspects. *The International Journal of Psychiatry in Medicine*. 1990 Jun;20(2):193-208. *Diabetes mellitus* <https://doi.org/10.2190/ADLY-1UU0-1A8L-HPXY>
- [4] Tayde PS, Bhagwat NM, Sharma P, Sharma B, Dalwadi PP, Sonawane A, Subramanyam A, Chadha M, Varthakavi PK. Hypothyroidism and depression: Are cytokines the link?. *Indian journal of endocrinology and metabolism*. 2017 Nov;21(6):886. https://doi.org/10.4103/ijem.IJEM_265_17
- [5] So M1, MacIsaac RJ, Grossmann M. Hypothyroidism. *Aust Fam Physician*. 2012 Aug;41(8):556-62.
- [6] Mansourian AR. A review on post-puberty Hypothyroidism: A glance at myxedema. *Pakistan journal of biological sciences*. 2010 Sep 15;13(18):866. <https://doi.org/10.3923/pjbs.2010.866.876>
- [7] Hashempour M, Amini M, Iranpour R, Sadri GH, Javaheri N, Haghghi S, Hovsepian S, Javadi AA, Nematbakhsh M, Sattari G. Prevalence of congenital hypothyroidism in Isfahan, Iran: results of a survey on 20,000 neonates. *Horm Res*. 2004;62(2):79-83. <https://doi.org/10.1159/000079392>
- [8] Ordookhani A, Mirmiran P, Moharamzadeh M, Hedayati M, Azizi F. A high prevalence of consanguineous and severe congenital hypothyroidism in an Iranian population. *J Pediatr Endocrinol Metab*. 2004 Sep;17(9):1201-9. <https://doi.org/10.1515/JPEM.2004.17.9.1201>
- [9] Paunkovic N, Paunkovic J, Pavlovic O , Paunovic Z. The significant increase in incidence of Graves' disease in eastern Serbia during the civil war in the former Yugoslavia (1992 to 1995). *Thyroid* 1998; 8:37–41. <https://doi.org/10.1089/thy.1998.8.37>

- [10] Yoshiuchi K, Kumano H, Nomura S. Stressful life events and smoking were associated with Graves' disease in women, but not in men. *Psychosom Med* 1998;60:182-185.
<https://doi.org/10.1097/00006842-199803000-00013>
- [11] Matos-Santos A, Nobre EL, Costa JG. Relationship between the number and impact of stressful life events and the onset of Graves' disease and toxic nodular goitre. *Clin Endocrinol (Oxf)* 2001;55:15-19.
<https://doi.org/10.1046/j.1365-2265.2001.01332.x>
- [12] Winsa B, Adami HO, Bergstrom R, Gamstedt A, Dahlberg PA, Adamson U, Jansson R, Karlsson A. Stressful life events and Graves' disease. *Lancet* 1991; 338:1475-1479.
[https://doi.org/10.1016/0140-6736\(91\)92298-G](https://doi.org/10.1016/0140-6736(91)92298-G)
- [13] Strieder TG, Prummel MF, Tijssen JG, Brosschot JF, Wiersinga WM. Stress is not associated with thyroid peroxidase autoantibodies in euthyroid women. *Brain, behavior, and immunity*. 2005 May 1;19(3):203-6.
<https://doi.org/10.1016/j.bbi.2004.07.003>
- [14] Vestergaard P, Rejnmark L, Weeke J, Hoeck HC, Nielsen HK, Rungby J, et al. Smoking and thyroid disorders – a meta-analysis. *European Journal of Endocrinology* 2002; 146 153-161.
<https://doi.org/10.1530/eje.0.1460153>
- [15] Mosekilde L. Smoking as a risk factor for Graves' disease, toxic nodular goiter, and autoimmune hypothyroidism. *Thyroid* 2002; 12 69-75.
- [16] Strieder TGA, Prummel MF, Tijssen JGP, Endert E, Wiersinga WM. Risk factors and prevalence of thyroid disorders in a cross-sectional study among healthy female relatives of patients with auto-immune thyroid disease. *Clinical Endocrinology (Oxford)* 2003; 59 396-401.
<https://doi.org/10.1046/j.1365-2265.2003.01862.x>
- [17] Knudsen N, Bulow I, Laurberg P, Perrild H, Ovesen L, Jorgensen T. High occurrence of thyroid multinodularity and low occurrence of subclinical hypothyroidism among tobacco smokers in a large