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Original Research Article

Link between Psychiatric and Autoimmune Thyroid Disorder

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ABSTRACT

Background: The autoimmune disorders and psychiatric diseases seem to be linked in a same aberrancy in the immune-endocrine system. An association between mood disorder and thyroid immunity had been demonstrated in community samples, psychiatric patients as well as primary care patients, so psychiatric evaluation in thyroid autoimmunity was planned.
Objective: The aim of the study was to assess the pattern of psychiatric morbidity in autoimmune disorders.
Methodology: We conducted a cross-sectional study in SMHS Government medical college associated Hospital. We selected every alternate autoimmune thyroid patients by Stratified random sampling attending to the endocrinological OPD. General description, demographic data and psychiatric history were recorded using the semi structured interview scale. Selected patients were subjected to Mini International Neuropsychiatric Interview –Plus (MINI - Plus) for evaluation of symptoms and diagnosis. A control group (n = 49) was selected amongst the patients and the same instruments were applied. Data was analyzed and associations were tested using the Chi square test. The results expressed as percentages.
Results: Out of total 49 subjects 18 were males (36.7%), and 31 females (63.26%). Most of cases belong to 25 -40 year age group (46.93%) followed by age group 41 – 50 years (26.5%) and 32.6 % were married and 63.2% were unmarried. 65.5 % of patients had significant psychiatric morbidity. Only 34.69 % of the control group had psychiatric problems (p = 0.044) highly significant. Depressive disorder (28.6%) was the most common presentation, followed by panic disorder (8.2%).
Conclusion: The increased frequency of psychiatric morbidity among the thyroid raises the need for early diagnosis and prompt treatment.
Key words: Autoimmune thyroid disorder, morbidity.

INTRODUCTION

Autoimmune thyroid disorders are most common type of autoimmune disoders. The prevalence of autoimmune thyroid disease is higher in women than men prevalence in the community ranged from 4 to 25%. [1] The two main types of autoimmune thyroid disease are Hashimoto's type autoimmune thyroiditis (AIT), including the atrophic form, which presents

as primary myxedema, and autoimmune thyroiditis, which is also known as Graves' disease. The production of antibodies to at least one of the main thyroid specific auto antigen i.e. thyroglobulin (Tg), the main protein of the colloid; thyroperoxidase (TPO), is enzyme that catalyses iodine organification, and the receptor for the thyrotropin (TSH-R) are the almost invariable feature of AITD (autoimmune thyroid disease). [2] In clinical practice, a diagnosis of AITD is usually based on the presence of thyroid antibodies in serum. [3]

Studies have shown association between mood disorder and thyroid immunity in community samples, psychiatric patients as well as primary care patients. [4] Autoimmune thyroid disorders may be linked to psychiatric disorders like depression and various anxiety disorders. [5] Fountoulakis (2004) et al studied association between autoimmune thyroid disease and unipolar depression, and found that compared to control patients, all depressive subtypes had significantly higher thyroid binding inhibitory immunoglobulin and higher thyroid microsomal antibodies. [6] Pop(1998) et al concluded that women with elevated TPO-Ablevels are especially likely to depression. [7] Bunevicius (2007) found higher scores of anxiety independently from their thyroid function in autoimmune disorders. [3] Furthermore, several studies have shown the presence of autoantibodies itself may produce abnormal behaviour even in euthyroid state. [8]

The aim of our study was to evaluate the relationship between psychiatric disorders and thyroid autoimmunity. This paper present the results of the cross psychiatric and endocrinological evaluation from the tertiary hospital of Kashmir.

METHODOLOGY

Study Design: This was a cross-sectional study conducted in a the Shri Maharaja Hari Singh (SMHS) Hospital of Government Medical College (GMC), Srinagar and the study sample was drawn from patients attending the Endocrinological OPD in the Department. Approval for conducting the present study was obtained from the hospital's Clinical Research Ethics Committee.

Patients: Patients who attended the endocrinological clinic from April 2011to September 2012 with a confirmed diagnosis of autoimmune thyroid disease were included in the randomised sampling. Patients were excluded if they were not Kashmiri, previous history of psychiatric disease. Patients with other systemic diseases, mental retardation, or pregnancy who were unable to give informed consent were also excluded.

Procedure: The selected patients were first approached by endocrinology specialist performed the thyroid studies, while we blind to the endocrine diagnosis assessed the patient for psychiatric diagnosis using MINI International Neuropsychiatric Interview Schedule Plus (MINI PLUS. The MINI Plus is short and efficient diagnostic interview to be used in clinical as well as diagnostic settings. It follows Diagnostic and Statistical Manual of Mental Disoders (DSM IV) and International Classification of Diseases (ICD-10) criteria for psychiatric disorders. The MINI has been validated in the US and Europe. [10] Demographic and clinical data were collected by the author from the patients and from their medical records. The patients were then selected using systematic random sampling choosing every alternate patient. General information including age, sex, residence, economic status etc. was included. During the psychiatric evaluations none of the patients received thyroid hormone replacement therapy or anti-thyroid treatment. General description, demographic data and psychiatric history was recorded using the semi-structured interview which

was pretested.The subjects were compared with age and sex matched controls. (n=49)

Data Analyses: All statistical analyses were performed using the Statistical Package for the Social Sciences, Windows version 16.0 (SPSS Inc., Chicago [IL], US). Descriptive statistics were performed using the socio-demographic and clinical data. Student t test was used to compare the means of continuous variables in 2 independent samples when the data were normally distributed or the assumptions for the t test were met. Pearson Chi-square test for independence was used to analyse the association between nominal variables and dichotomous independent variables in contingency tables.

Thyroid Function Tests Normal Ranges

Test	Abbreviation	Normal ranges
Serum thyrotropin/Thyroid stimulating hormone	TSH	0.5-6 uU/ml
Serum triiodothyronine	T3	80-180 ng/dl
Serum thyroxine	T4	4.6-12.0 ug/dl

NOTE; there is slight variation of normal ranges of TFT's from different laboratories.

- uU/ml = microunit per milliliter
- ng/dl = nanograms per deciliter
- ug/dl = micrograms per deciliter.

Anti-thyroid peroxidase (anti-TPO) antibodies

Anti-thyroid peroxidase (anti-TPO) antibodies were determined by means of Micro plate Enzyme Immunoassay using Accubind Elisa Microwells (Monobind Inc USA). Values in excess of 60 IU were considered.

RESULTS

Forty nine autoimmune thyroid disorders patients from the endocrinological departments of Govt. Medical College, Srinagar hospitals were taken up for study. They were evaluated in detail with regard to socio-demographic profile and the presence of psychiatric co-morbidity and the results have been presented below in the tabulated and graphical form. Out of total49 subjects 18 were males (36.7 %), and 31 were females (63.26 %). Most of cases belong to 25-40 years age group (46.93 %) followed by 41 -50 year age group (26.5%) followed by age group 51 – 60 years (14.28 %) and 32.6% were married and 63.2% were unmarried. Nearly half (46.9 %) of the study subjects were from nuclear families and 21 (42.85%) were illiterate and 55.1% were household worker and majority (46.9 %) belonging to middle class family.

65.3 % i.e. 32 patients out of 49 had a psychiatric co-morbidity in case group and 59.2 % i.e. 29 had a psychiatric co-morbidity in control group. The p-value of the comparison between the case and the control group is 0.044 which is significant.

Major Depressive Disorder was the most common psychiatric disorder present in 28.6 % i.e. 14 out of 49 patients and in 12.24 % i. e 6 in control group. The p-value of the comparison between the case and control patients is 0.0045which is non-significant.

Panic Disorder was the next most common diagnosis present in 8.2% i.e. 4 patients out of which 49 in case group and in 2 % i.e. 1 in control group. The p-value of the comparison between the case and the control patients is 0.168 which is non-significant.

Panic Disorder/ Agarophobia were present in 2% i.e. 1 patient out of which 49

in case group and in 2% i.e. 1 in control group. The p-value of the comparison between the case and the control patients is 1.00 which is non-significant.

Generalised Anxiety Disorder was present in 4.1% i.e. 2 patients out of 49 in case group and 2.04 % i.e. 1 in control group. The p-value of the comparison between the case and the control group is 0.69 which is non-significant.

Dysthymia was present in 4.1% i.e. 2 patients out of 49 in case and 4.1% i.e. 4 in control group. The p-value of comparison between the case and the control patients is 1.100 which is non - significant.

OCD was present in 2% i.e. 1 patients in case and 2% i.e. 1 in control group. The p-value of the comparison between the case and the control groups is 1.25 which is non-significant.

PTSD was present in 2% i.e. 1 patients in case and 2% i.e. 1 in control group. The p-value of the comparison between the case and the control groups is 1.21 which is non-significant.

Social phobia was present in 4.1% i.e. 2 patients out of 49 in case group and 4.1% i.e. 2 in control group. The p-value of the comparison between the case and the control group is 1.34 which is non-significant.

Table 1: Demographic Characteristics of the Studied Patients

Characteristic		N	%
Age (yr.)	≤ 25	5	10.2
	25 to 40	23	46.93
	41 to 50	13	26.5
	51 to 60	7	14.28
	> 60	1	2.04
	mean ± SD		
Gender	Male	18	36.7
	Female	31	63.26
Dwelling	Rural	28	57.14
	Urban	21	42.8
Marital status	Unmarried	31	63.2
	Married	16	32.65
	Widowed	2	4.08
Occupation	Household	27	55.10
	Unskilled	7	14.28
	Semiskilled	8	16.32
	Skilled	6	12.24
	Professional	1	2.04
Family type	Nuclear	23	46.9
	Joint	14	28.57
	Extended	12	24.48
Literacy status	Illiterate	21	42.85
	Primary	11	22.4
	Secondary	5	10.2
	Matric	7	14.28
	Graduate	4	8.16
	Postgraduate/Professional	1	2.04
Family Income(Rs)	< 5000	14	28.57
	5000 to 10000	31	63.26
	≥ 10000	4	8.16
Socioeconomic status (Kuppuswamy Scale)	Lower	6	12.24
	Upper lower	11	22.4
	Middle	23	46.9
	Upper middle	5	10.2
	Upper	4	8.16

Psychiatric morbidity in autoimmune thyroid disorders (Table 2)

	Case		Control		P value
	N	%	N	%	
Major Depressive Disorder	14	28.6	6	12.24	0.0045
Dysthymia	2	4.08	1	4.08	1.1
Panic with Agarophobia	1	2	1	2	1.15
Panic Disorder	4	8.2	1	2	0.168
Alcohol Abuse and Dependence Disorder	1	2	1	2	0.52
OCD	1	2	1	2	1.25
Social Phobia	2	4.1	2	4.1	1.34
PTSD	1	2	1	2.04	1.21
Generalized Anxiety Disorder	2	4.1	1	2.04	0.69
Psychotic disorder	4	8.2	2	4.08	0.45
Total Psychiatric Co-morbidity	32	65.36	17	34.69	0.044

Table 3 Numberofpatietnsontreatment

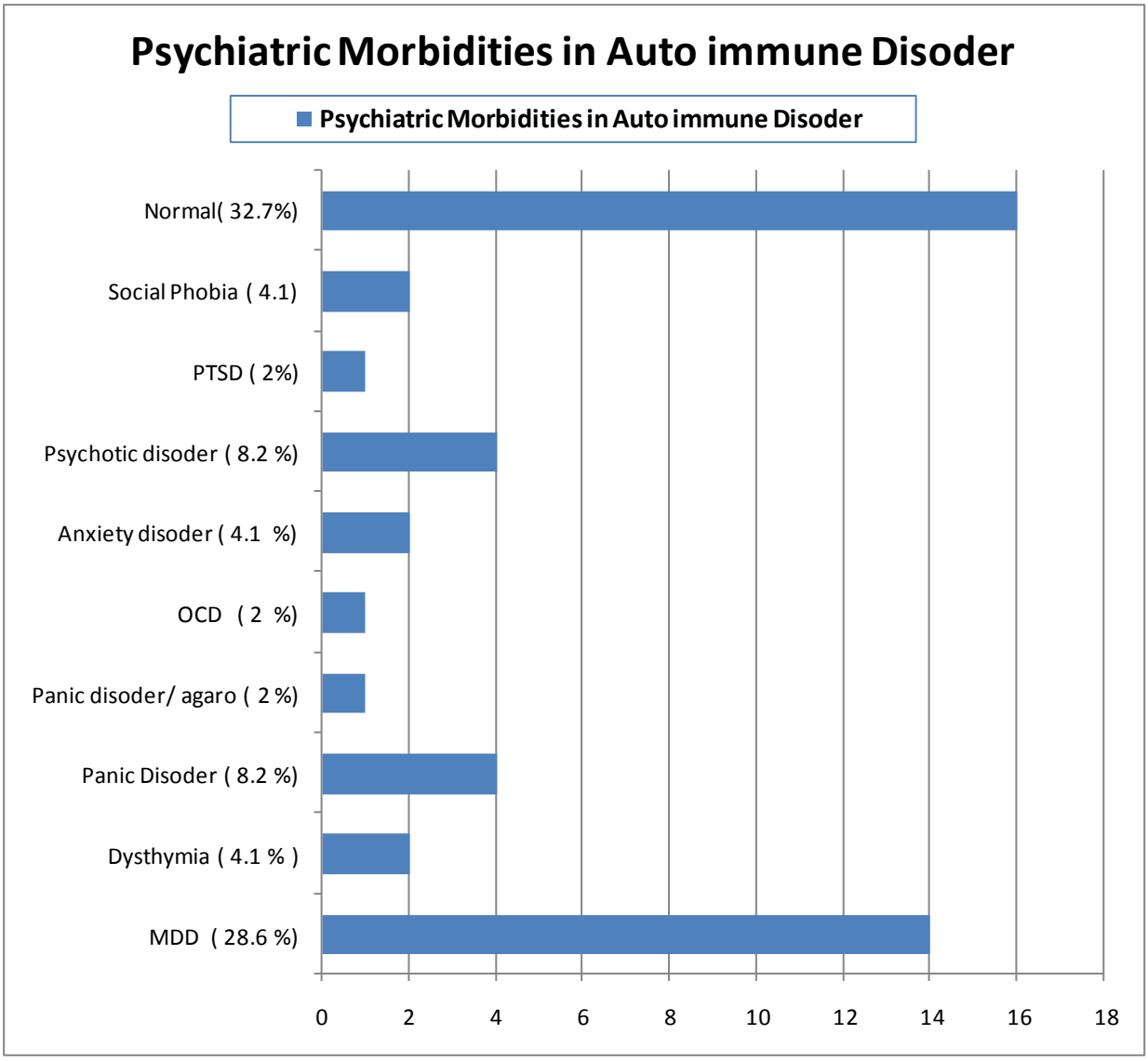
			Treatment		
			Yes	No	Total
GROUP	CASE	Count	40	9	49
		% within GROUP	81.6%	18.4%	100.0%

Thyroid function tests in Auto-immune Thyroid Disorders (AITtable 4

	Serum hormone levels Mean±SD		
	T3	T4	TSH
AITD patients	113.76± 25.161	7.27± 1.718	3.14± 1.051
Controls	103.06±14.914	6.94± 1.499	2.86±1.926

Anti TPO Antibodies in Auto-immune Thyroid Disorders (AITD) table5

	Anti-Tpo antibodies Mean±SD	
Anti-Tpo antibodies (IU/ml	Control	Case
	32.6±21.4	141.5 ±11.66



DISCUSSION

In our study65.3 % of the autoimmune thyroid disorders patients were suffering from a psychiatric disorder. Due to a significant proportion of patients having psychiatric morbidities, the psychiatric health of these patients should not be overlooked. However, among the 49 patients who were diagnosed with current psychiatric disorders, only 18.4 % of them were receiving psychiatric treatment. Under recognition of psychiatric morbidity is not an uncommon phenomenon, and has been found in similar studies of psychiatric morbidity. [9] Our results are supported by Mauro Giovanni Carta et al (2005) case control study on psychiatric disorders in Hashimoto disease and euthyroid goitre and reported that varied psychiatric disorders (both depressive and anxiety disorders) are associated with thyroid autoimmune disorders. [10] Thus, more attention should be paid to recognising psychiatric morbidities in these groups of patients.

Major Depressive Disorder was the most common psychiatric disorder present

in 28.6 % and Generalised Anxiety Disorder was present in 4.1 % of autoimmune thyroid disorders .The results are in tune with Mauro Giovanni Carta et al (2005). [10] Bunevicius et al who reported that the women with persistent Graves' hyperthyroidism had a higher prevalence of mood and anxiety disorders. [3] The association of autoimmune thyroid for Major Depressive Disorder and anxiety may have implication for the development of preventive interventions. Particularly, further studies will be required to confirm whether these are a consequence and not a cause of thyroid autoimmunity and will provide new insight in to the psychopathology of disease. The other anxiety disorders like Panic Disorder was the next most common diagnosis present in 8.2 % and Panic Disorder/ Agarophobia were present in 2 %. OCD was present in 2 % and Social phobia was present in 4.1 %.Our results are supported by Rogers et al noted that patients with panic disorder and co-morbid major depressive disorder had significantly higher rates of reported medical illnesses than anxiety disordered patients who did not suffer with concurrent depression. [11] PTSD was present in 1% and Dysthymia was present in 4.1 % our studies and can be explained on the basis of findings of basis of continuing conflict and turmoil in valley. [12] Psychotic disorders was present in 4 % in our study and the results are supported by Brownlie (2000) et al. who retrospectively studied 18 patients with comorbid newly diagnosed hyperthyroidism and psychoses and found that in 11 younger patients, hyperthyroidism was caused by autoimmune thyroid disorder i.e. Graves' disease). [13]

Since it is well known that neuroendocrine secretory systems are involved in the control of immune reaction and psychological stress can cause dysregulation of the immune system. It was hypothesized that common neuroendocrine dysregulation involving cytokines might concur towards the pathogenesis of both affective disorders and autoimmune disease and it was confirmed by evidences that suggests that thyroid autoimmunity may be affected by Hypothalamic-Pituitary-Adrenal (HPA) axis through the balance of proinflammatory and anti-inflammatory cytokines. [14]

Our study indicates an association diagnosis of mood or anxiety disorder and anti-TPO+ in a population sample which had not previous psychiatric history. Further longitudinal studies will be required to confirm whether these disorders are a consequence or not a cause of thyroid autoimmunity.

CONCLUSION

This study is the first to offer data on psychiatric morbidity among the local Kashmiri autoimmune thyroid disorder .The results suggest that psychiatric disorders are common in autoimmune thyroid patients. Depressive disorders and anxiety disorders are the commonest psychiatric disorders. Further research with a prospective design is suggested to examine the causal relationship between the associated factors and psychiatric disorders among autoimmune thyroid patients.

REFERENCES

1. Bjoro T, Holmen J, Kruger O, Midthjell K, Schreiner T, Sandnes L, Brochmann H: Prevalence of thyroid disease, thyroid dysfunction and thyroid peroxidase antibodies in a large, unselected population. The Health study of Nord Trondelag (HUNT). Eur J Endocrinol 2000, 143(5):639-647.
2. Armengol MP, Juan M, Lucas-Martin A, Fernandez-Figueras MT, Jaraquemada D, Gallart T, Pujol-Borrell R. Thyroid autoimmune disease: demonstration of thyroid antigen-specific B cells and recombination-

activating gene expression in chemokine-containing active intrathyroidal germinal centres. Am J Pathol 2001; 159: 861-873.
3. Bunevicius R, Peceliuniene J, Mickuviene N, Bunevicius A, Pop VJ, Girdler SS. Mood and thyroid immunity assessed by ultrasonographic imaging in a primary health care. J Affect Disord 2007; 97: 85-90.
4. Carta MG, Loviselli A, Hardoy MC, Massa S, Cadeddu M, Sardu C, Carpiniello B, Dell'Osso L, Mariotti S. The link between thyroid autoimmunity (antithyroid peroxidase autoantibodies) with anxiety and mood disorders in the community: a field of interest for public health in the future. BioMed Central Psychiatry 2004; 4: 25.
5. Carta MG, Hardoy MC, Boi MF, Mariotti S, Carpiniello B, Usai P: Association between panic disorder, major depressive disorderand celiac disease. A possible role of thyroidautoimmunity. Journal of Psychosomatic Research 2002, 53:789-793.
6. Fountoulakis KN, Lacovides A, Grammaticos P. Thyroid function in clinical subtypes of major depression. BioMed Central Psychiatry 2004; 4: 6.
7. Pop VJ, Maartens LH, Leusink G, van Son MJ, Knottnerus AA, Ward AM, Metcalfe R, Weetman AP. Are autoimmune thyroid dysfunction and depression related? J Clin Endocrinol Metab 1998; 83(9): 3194-3197.
8. Reuss VI. Psychiatric aspects of thyroid disease; in Joffe RT, Levitt AJ (eds): The Thyroid Axis and Psychiatric Illness. Washington, American Psychiatric Press Inc, 1993, pp 171-194.
9. Reuss VI, Freimer N. Antithyroid antibodies: Behavioral significance; in Bunney WE Jr, Hippus H, Laakmann G et al (eds): The Thyroid Axis and Psychiatric Illness. Washington, American Psychiatric Press Inc, 1993.
10. Mauro Giovanni Carta, Maria Carolina Hardoy, Bernardo Carpiniello, Andrea Murru, Anna Rita Marci, Fiora Carbone, Luca Deiana, Mariangela Cadeddu, StefanoMariott. A case control study on psychiatric disorders in Hashimoto disease and euthyroid goitre: not only depressive but also anxiety disorders are associated with thyroid autoimmunity Clinical Practice and Epidemiology in Mental Health 2005, 1:23
11. Roger MP, White K, Warshaw MG et al. Prevalence of medical illness in patients with anxiety disorders. Int J Psychiatry Med 1994; 24: 83-96..
12. Margoob M.A.A study of present magnitude of psychiatric disorders and the existing treatment services in Kashmir (1990-1994). JK Practitione 1995; 2(3):165-168.
13. Brownlie BEW, Rae AM, Walshe JWB, et al. Psychoses associated with thyrotoxicoses. "Thyrotoxic psychoses": a report of 18 cases, with statistical analysis of incidence. Eur J Endocrinol 2000 May; 142 (5): 438-44
14. Elenkov IJ, Chrousos GP. Stress hormones, pro inflammatory and anti-inflammatory cytokines, and autoimmunity. Annals of the New York Academy of Sciences 2002; 966: 303.

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