ORIGINAL ARTICLE

Determine the Frequency of Hypothyroidism in Patients with Depressive Disorder

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ABSTRACT

Aim: To examine the frequency of hypothyroidism in patients presented with depressive disorder.
Study Design: Cross-sectional/Observational
Place and duration: Department of Medicine, Chandka Medical College Hospital Larkana from 1st July 2018 to 30th June 2019.
Methods: Two hundred patients of both genders presented with depressive disorder were included in this study. Patients detailed demographic including age, sex, education, socioeconomic status and residence were recorded after informed consent. Blood sample from each patient was collected to examine the thyroid stimulating hormone.
Results: There were 46 (73%) were females while 27% patients were males with mean age of 42.5±9.46 years. 110 (55%) patients were illiterate while 45% were literate. 60% patients had urban residency. Majority of patients 85% were hypertensive. Hypothyroidism was observed in 30% patients.
Conclusion: The frequency of hypothyroidism is high in patients with depressive disorder.
Keywords: Hypothyroidism, Depression, Anxiety, Thyroid Stimulating Hormone

INTRODUCTION

Hypothyroidism is the most prevalent endocrine disorder worldwide[1]. It can be defined as a disorder of the endocrine system in which there is a deficiency in thyroid hormone production. Many factors affect the prevalence of thyroid disorders such as age, sex, ethnicity, and iodine intake[2].

Numerous studies in developed countries suggested that hypothyroidism prevalence is estimated to be 4–5% of the population worldwide.[3] It is estimated to be 5% among the population of the United States over the age of 12 years[4] while in other counties such as the United Kingdom and India, it was estimated to be about 2% and 10.95%, respectively.[3,5] In Libya in 2008, it was estimated to be 6.18%[6] whereas in Saudi Arabia in Makkah 2011, the estimated prevalence of hypothyroidism was 47.34% of the study's population[6]. Manifestations of hypothyroidism include tiredness, weight gain, cold intolerance, constipation, forgetfulness, slow speech, and depression[7].

Thyroid hormone plays a role in normal neurological development function of the central nervous system by stimulating the development of neuronal processes, axons, and dendrites, and it increases the rate of neuronal proliferation[8]. Hypothyroidism can cause behavioral disturbances, depressive symptoms, and anxiety, and it can impact certain aspects of cognitive functioning, such as slowed information processing speed, reduced efficiency in executive functions, poor learning and memory, mood disturbance, and problems in verbal fluency. More severe hypothyroidism can mimic melancholic depression and dementia[9]. Depression can be diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition criteria, which consist of depressed mood, anhedonia (loss of interest in pleasurable activity), change in appetite or weight, feeling of worthlessness or guilt, disturbance in sleep, decreased concentration, psychomotor agitation or retardation, loss of energy, and recurrent thoughts of death. Five out of these nine symptoms have to be experienced for at least 2 weeks for the diagnosis to be made[10]. Screening of depression can be made through various instruments; the most practically and commonly used is the Patient Health Questionnaire-9 (PHQ-9) screening tool[11].

The serum TSH level was associated with the severity of depressive symptoms in hypothyroid patients, and levothyroxine hormone replacement therapy was found to improve depression in hypothyroidism[12]. Symptoms of hypothyroidism such as weight gain and hair loss have shown to increase the risk of depression, where those who are overweight and obese tend to have a higher risk of depressive symptoms than those with normal weight[13].

The present study was conducted to examine the frequency of hypothyroidism in patients with depressive disorders.

MATERIALS AND METHODS

The present observational study was conducted at Department of Medicine, Chandka Medical College Hospital Larkana from 1st July 2018 to 30th June 2019. A total 200 patients of both genders with ages above 20 years presented with depressive disorders were included in this study. Patients with history of hypothyroidism, chronic renal failure, coronary heart diseases, lactating and pregnant women and patients with severe psychiatric disorders were excluded from this study. Patients detailed demographic including age, sex, education, socio-economic status, residence, duration of depression and history of hypertension were recorded after informed written consent. Level of depression was examined by phq-9 questionnaire. Two cc blood samples from each patient were collected to examine the thyroid stimulating hormone. Frequency of hypothyroidism was recorded. All the data

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was analyzed by SPSS 24. Chi-square test was applied. P-value <0.05 was considered as significant.

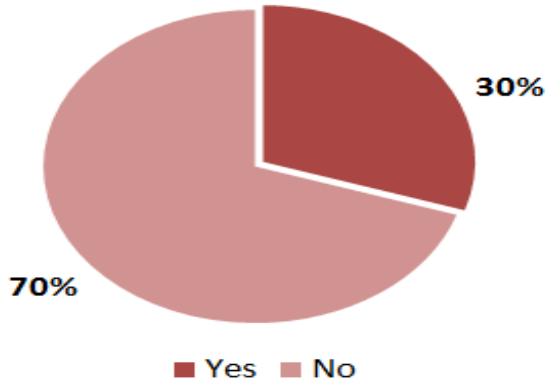
RESULTS

One hundred and forty six (73%) were females while 27% patients were males with mean age of 42.5±9.46 years. 110 (55%) patients were illiterate while 45% were literate. 60% patients had urban residency while 80 (40%) patients had rural residence. Majority of patients 85% were hypertensive. According to the level of depression 110 (55%) patient had mild depression, 60 (30%) patients had moderate, 16 (8%) patients had moderate to severe and 14 (7%0 patients had severe depression. Mean duration of depression was 30.25±14.45 months (Table 1). According to the level of thyroid stimulating hormone (TSH) we found that 60 (30%) patients had hypothyroidism (Fig. 1). We found that the frequency of hypothyroidism was high in females 27/146 (18.49%) as compared to males 3/54 (5.55%). There was a significant difference between male and females regarding frequency of hypothyroidism with p-value <0.05 (Table 2).

Table 1: Demographical information of all the patients

Variable	No.	%
Age (years)	42.5±9.46	
Gender		
Male	54	27.0
Female	146	73.0
Education		
Literate	90	45.0
Illiterate	110	55.0
Residence		
Urban	120	60.0
Rural	80	40.0
Socioeconomic status		
Low	130	65.0
Middle	70	35.0
Hypertension		
Yes	170	85.0
No	30	15.0
Level of depression		
Mild	110	55
Moderate	60	30
Moderate to Severe	16	8
Severe	14	7
Mean duration of depression	30.25±14.45	

Fig. 1: Frequency of hypothyroidism among all the patients



According to the association of hypothyroidism with level of depression we found that out of 110 mild depressed patients 10 (9.09%) patients had hypothyroidism, 8 (13.33%) patients had hypothyroidism out of 60 moderate depressed patients, 6 (37.5%) patients had hypothyroidism out of 16 moderate to severe patients and 6 (42.86%) patients had hypothyroidism out of 14 severe depressed patients. There was a significant association of hypothyroidism with severity of depression with p-value <0.05 (Table 3).

Table 2: Association of hypothyroidism with gender

Hypothyroidism	Male (n=54)	Female (n=146)	P-value
Yes	3 (5.55)	27 (18.49)	0.024
No	51 (94.45)	119(81.51)	

Table 3: Association of hypothyroidism with level of depression

Depression level	Hypothyroidism		P value
	Yes	No	
Mild (n=110)	10 (9.09%)	100(90.91%)	0.001
Moderate (n=60)	8 (13.33%)	52(86.67%)	
Moderate to Severe (n=16)	6 (37.5%)	10(62.5%)	
Severe (n=14)	6 (42.86%)	8(57.14%)	

DISCUSSION

Depressive disorders such as depression, anxiety and stress are the common clinical problems with high rate of morbidity and mortality. Prevalence of hypothyroidism in patients with depressive disorder is reported high in many of previous studies[14,15]. The present study was conducted to examine the frequency of hypothyroidism in patients with depressive disorder. In this regard 200 patients were analyzed in which majority 73% of patients were females as were compared to males 27% with mean age 42.5±9.46 years. These results were similar to some previous studies in which female patients were high in numbers with depressive disorder 60% to 80% as compared to males and majority of patients were ages above 30 years[16,17].

In present study we found that 60(30%) patients had hypothyroidism and among these patients female were predominant and were on high risk as compared to male patients. A study conducted by Kumar et al[18] regarding prevalence of hypothyroidism in depressive disorder patients and they reported the prevalence of hypothyroidism was 25%. In their study all the patients were females. In our study we found that 85% patients had hypertension while 15% were normal. Kumar et al[18] also reported 83% patients were hypertensive while 17% were normal.

In present study we found that there was a significant association of hypothyroidism with severity of depression with p-value <0.05. According to the association of hypothyroidism with level of depression we found that out of 110 mild depressed patients 10(9.09%) patients had hypothyroidism, 8(13.33%) patients had hypothyroidism out of 60 moderate depressed patients, 6(37.5%) patients had hypothyroidism out of 16 moderate to severe patients and 6 (42.86%) patients had hypothyroidism out of 14 severe depressed patients. A study conducted by Mohammad et al[19] reported that there was no significant association of hypothyroidism with depressed and non depressed

patients. Some of other previous studies demonstrated that frequency of hypothyroidism increases with increasing severity of depression[20-22].

CONCLUSION

The frequency of hypothyroidism is high in patients with depressive disorder. We found that female patients were high in numbers as compared to male patients and had significant association with hypothyroidism. It is also concluded that patients with severe moderate to severe and severe depression level had high prevalence of hypothyroidism.

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