NEW RESEARCH

JCSM
Journal of Clinical Sleep Medicine

http://dx.doi.org/10.5664/jcsm.2274

"Myxedema Madness" Associated with Newly Diagnosed Hypothyroidism and Obstructive Sleep Apnea

J. Matthew Neal, M.D., M.B.A.; Rodney Joe O. Yuhico, M.D.

Department of Medicine, Indiana University Health Ball Memorial Hospital, Muncie IN

CASE REPORTS

This is the case report of a 32-year-old obese male with a history of agitation, hallucinations, and delirium, recently diagnosed with primary hypothyroidism; he gave a several month history of fatigue with nocturnal snoring and frequent awakening. Polysomnogram revealed severe OSA; initiation of CPAP and levothyroxine resulted in immediate improvement. The lack of a previous psychiatric history and acuteness of presentation was consistent with hypothyroid psychosis complicated by sleep deprivation cause by untreated OSA. Primary hypothyroidism is a common disorder often associated with depression. It is rarely associated with psychosis and was first described as "myxoedematous madness" in 1949. It has not been previously reported to cause psychosis when associated with obstructive sleep apnea. This case illustrates the need for examination of potential multiple organic causes in a patient who presents with psychosis in the critical care setting.

Keywords: Hypothyroidism, myxedema madness, psychosis, sleep apnea

Citation: Neal JM; Yuhico RJO. "Myxedema madness" associated with newly diagnosed hypothyroidism and obstructive sleep apnea. *J Clin Sleep Med* 2012;8(6):717-718.

Hypothyroidism is uncommonly associated with psychosis, and initially described as "myxoedematous madness" in 1949 by Asher.[1] It has not been previously associated with another common medical condition also resulting in cognitive dysfunction—obstructive sleep apnea (OSA).

We report the case of a 32-year-old obese male, diagnosed with primary hypothyroidism (TSH 92.0 mIU/mL, normal 0.40-4.65 mIU/mL) admitted to the critical care unit with a several day history of agitation, hallucinations, and delirium.

REPORT OF CASE

A 32-year-old Caucasian male was brought to the emergency department with a several day history of headache, fatigue, and hallucinations (being attacked by bats). He had not slept in 6 days, and family members related a history of poor sleep, frequent awakenings, and snoring for the last few months. He had been found to have primary hypothyroidism (TSH 92.5 mIU/mL, normal 0.42-4.82 mIU/mL) several days earlier and had not yet begun replacement therapy. He had a history of non-Hodgkin lymphoma, treated 4 years earlier with chemotherapy and mantle radiation, in remission; prior thyroid function studies were not available. Medications included cetirizine, fexofenadine, and alprazolam; the last medication had been started due to difficulty sleeping.

Physical examination revealed an obese Caucasian male (BMI 35.0 kg/m^2). Vital signs were remarkable for tachycardia (heart rate 106). Examination was unremarkable except for obesity, large neck circumference (19 inches), and agitated, belligerent behavior. Laboratory studies demonstrated elevated TSH (98.7 mIU/mL, normal 0.40-4.65) and creatine kinase (> 14,000 U/L, normal 30-170 U/L). Serum toxicology screen revealed no alcohol or illicit substances.

He was admitted to the critical care unit; because of severe agitation, he received intravenous sedation. Daily levothyroxine, 150 μg, was initiated. Because of possible rhabdomyolysis (presumably due to agitation and muscle trauma), he received intravenous hydration with sodium bicarbonate.

After 72 h, his symptoms had improved markedly, and serum creatine kinase returned to normal after several days. Given his obesity, poor sleep quality, and snoring, a polysomnogram was ordered at that time; this was performed and revealed an apnea-hypopnea index (AHI) of 61.5 (normal: < 5) and respiratory distress index (RDI) of 96.5 (normal: < 5), indicating severe obstructive sleep apnea. Continuous positive airway pressure (CPAP) was initiated.

He was discharged in stable condition 2 days later and continued to improve as an outpatient after continuing CPAP and thyroid replacement therapy, and has had no recurrent neuropsychiatric events.

DISCUSSION

This patient's clinical presentation was consistent with hypothyroid psychosis ("myxedema madness"), likely exacerbated by coexistent severe OSA. The psychological disturbances associated with hypothyroidism were recognized in early literature; hypothyroidism was first reported as being associated with psychosis in 1888, when the Committee on Myxedema of the Clinical Society of London first postulated a link between the two.[2] The term "myxedema madness" was later coined by Asher in 1949,[1] and this entity has been increasingly realized as an uncommon potential cause of psychosis.

While typically associated with lassitude and depression, as many as 15% of patients can exhibit psychosis with hypothyroidism.[3] The clinical presentation of psychosis is not uniform,

and no specific group of findings is typical.[4] Hallucinations have frequently been reported. While most studies show a slow reversal of psychosis (within weeks or months), rapid improvement (within one week) has rarely been described.[2]

Bahammam et al. reported the incidence of clinical hypothyroidism in patients with newly diagnosed OSA to be only 0.4%, although the incidence of subclinical hypothyroidism was much higher (11.1%).[5] Sleep disorders such as obstructive sleep apnea may be associated with psychosis as well as significant cognitive and behavioral dysfunction, although the most common psychiatric disturbance associated with OSA is depression.

OSA symptoms in hypothyroid patients typically abate after replacement therapy. Rajagopal et al. noted that apneic events in hypothyroid OSA patients decreased from 71.8 to 12.7 per hour after three to twelve months of thyroid replacement.[6]

Several cognitive and psychiatric alterations associated with OSA have also been described. Lee et al. identified a young person presenting with recurrent psychosis refractory to an antipsychotic.[7] He was later diagnosed with OSA by polysomnography and underwent tonsillectomy with subsequent remission of psychotic attacks.

The clinician must be aware of the variability in psychiatric symptoms of patients with hypothyroidism and OSA. The constellation of neuropsychiatric symptoms is variable, and no specific set of findings can exclude the disorder; this should be done by biochemical evaluation. Since hypothyroidism and obstructive sleep apnea are both common medical conditions, both should be considered in any patient presenting with such symptoms. It demonstrates the importance of investigating organic causes of psychosis and other causes (e.g., sleep apnea), as the initiation of OSA treatment likely hastened the recovery.

REFERENCES

1. Asher R. Myxoedematous madness. *Br Med J* 1949;2:555-62.
2. Heinrich TW, Grahm G. Hypothyroidism presenting as psychosis: myxedema madness revisited. *Prim Care Companion J Clin Psychiatry* 2003;5:260-6.
3. Lehrmann JA, Jain S. Myxedema psychosis with grade II hypothyroidism. *Gen Hosp Psychiatry* 2002;24:275-7.
4. Hall RC. Psychiatric effects of thyroid hormone disturbance. *Psychosomatics* 1983;24:7-11,15-18.
5. Bahammam SA, Sharif MM, Jammah AA, Bahammam AS. Prevalence of thyroid disease in patients with obstructive sleep apnea. *Respir Med* 2011;105:1755-60.
6. Rajagopal KR, Abbrecht PH, Derderian SS, et al. Obstructive sleep apnea in hypothyroidism. *Ann Intern Med* 1984;101:491-4.
7. Lee S, Chiu HF, Chen CN. Psychosis in sleep apnoea. Australian N Z J *Psychiatry* 1989;23:571-3.

SUBMISSION & CORRESPONDENCE INFORMATION

Submitted for publication February, 2012
Submitted in final revised form March, 2012
Accepted for publication May, 2012

Address correspondence to: J. Matthew Neal, M.D., Department of Medicine, Indiana University Health Ball Memorial Hospital, 2401 University Ave., Muncie, IN 47303; Tel: (765) 747-4350; Fax: (765) 751-1451; E-mail: jneal6@iuhealth.org

DISCLOSURE STATEMENT

This was not an industry supported study. The authors have indicated no financial conflicts of interest.