

Unusual presentation of more common disease/injury

Myxoedema madness

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Summary

A 59-year-old man was referred for Mental Health Act Assessment following several months of 'odd behaviour' and self-neglect reported by his neighbours. He presented as unkempt and expressed delusional ideas with respect to age, employment and identity of family members. He was fully oriented but lacked insight into his mental state and capacity for self-care. Physical examination revealed dry skin and slow relaxing reflexes. Blood investigations revealed a raised thyroid stimulating hormone and free T4 with positive thyroid peroxidase antibodies. MRI of the brain revealed frontal lobe and cerebellar atrophy, while neuropsychological assessment identified deficit in memory processing and executive functions. Despite appropriate correction of primary hypothyroidism with levothyroxine, the patient remained delusional with respect to age and employment although he showed some improvement in memory. Capacity for self-care remained poor; thus, he was eventually transferred to sheltered housing with rehabilitation.

BACKGROUND

This case of primary hypothyroidism presented to adult psychiatry services with predominant neuropsychiatric features. We note with interest the lack of marked physical features of hypothyroidism despite indications of a long-standing endocrinopathy. We also note the partial resolution of neuropsychiatric sequelae despite appropriate thyroid hormone replacement, indicating irreversible damage secondary to chronic metabolic changes. The potential subtle manifestations of hypothyroidism make it a diagnosis which is easy to miss and, given that a delay in effective treatment may result in irreversibility, this case reinforces the importance of considering endocrinopathies, including thyroid disease, in all patients presenting with psychiatric symptoms.

CASE PRESENTATION

A 59-year-old man was referred to our adult general psychiatry service for Mental Health Act Assessment following reports of 'odd behaviour' and self-neglect by his neighbours. His rented council flat was shabby and unhygienic, with several months of rent arrears, and he was reportedly accessing his residence through a back window. The patient presented as very dishevelled and unkempt, but he was pleasant and courteous in nature, reported good sleep and appetite, and described himself as 'happy'. He believed he was employed as a freelance architect and stated he was 38-years-old despite knowledge of his date of birth. He believed his parents were alive and well, claimed they lived on the upper floor of his residence, but described them with a different family name. Unable to explain these inconsistencies, he politely stated 'I will leave that up to you to explain'. There was no evidence of hallucinations. He was fully oriented but lacked insight into his mental state and capacity for self-care. There was no indication of alcohol or illicit substance misuse.

Physical examination revealed poor personal hygiene with long hair and nails and dry skin. Vital signs were normal with a blood pressure of 127/85 mm Hg, a pulse of 85 beats/min and a temperature of 36.8 °C. Neurological examination revealed slow relaxing reflexes but no proximal myopathy or focal neurological signs. The rest of physical examination was unremarkable.

INVESTIGATIONS

Blood investigations revealed a thyroid stimulating hormone of >100 mIU/litre (0.35–4.94 mIU/litre) and free T4 of 2.5 pmol/litre (9–19.1 pmol/litre) with positive thyroid peroxidase antibodies. Other laboratory investigations, including biochemical and haematological indices, folate and Vitamin B12 levels, and syphilis serology, were unremarkable. A CT and MRI scan of the brain revealed atrophy of both frontal lobes with an additional degree of cerebellar atrophy. Neuropsychological assessment suggested a higher level of premorbid cognitive functioning, with deficits identified mainly in memory processing and executive functions, with marked difficulties in planning and problem-solving.

DIFFERENTIAL DIAGNOSIS

Primary hypothyroidism presenting with myxoedema madness.

TREATMENT

Levothyroxine was prescribed for primary hypothyroidism gradually increasing dose until laboratory indices of thyroid function were within normal range.

OUTCOME AND FOLLOW-UP

Despite correction of primary hypothyroidism, the patient remained delusional with respect to age and employment,

as well as his parents' whereabouts, and insight remained poor. However, he did eventually recognise his parents' surname was different and stated he must have created a new one for himself. Due to lack of a reliable personal history, numerous attempts at tracing living relatives were unsuccessful. During his inpatient stay at our general adults' psychiatric unit he often spent time on his own, although he became more willing to engage in conversation and showed improvement in face recognition and name recollection with time. Capacity for self-care remained poor; thus, he was eventually transferred to sheltered housing with rehabilitation.

DISCUSSION

Thyroid hormone plays a major role in the regulation of mood, cognition and behaviour. The effects of hypothyroidism on mental state were recognised as early as 1888 when the Clinical Society of London published a report on 109 cases of myxoedema with features of 'acute or chronic manias, dementia, or melancholia'.¹ Published at a time when thyroid replacement therapy was unknown, the report claims: 'Delusions and hallucinations occur in nearly half the cases, mainly where the disease is advanced'. The term 'myxoedematous madness' was coined in 1949 by Richard Asher.² Published in the BMJ, Asher's paper reviews 14 cases of hypothyroidism with psychotic illness. He described myxoedema as 'one of the most important, one of the least known and one of the most frequently missed causes of organic psychoses'. Increased awareness of the condition, improved diagnostic tools and availability of treatment has since then transformed the management of thyroid deficiency with recent studies indicating that 5–15% of myxoedematous patients have some form of psychosis.³

No specific type of psychosis is characteristic of the myxoedematous patient. Possible presentations include delusions, auditory and visual hallucinations, perseveration and paranoia.^{4–5} Physical symptoms of hypothyroidism usually precede onset of psychosis by several months or years.⁶ However, thought disorders have been reported with clinical and subclinical hypothyroidism suggesting psychosis is not necessarily related to advanced disease.⁷

There are no well-defined diagnostic criteria for myxoedematous madness. Diagnosis usually relies on thyroid function laboratory investigations to confirm untreated hypothyroidism with exclusion of other causes of psychosis. Imaging techniques may reveal certain features associated with hypothyroidism. We note that other case reports have described white matter frontal lobe changes on MRI of the brain similar to the findings in our patient.⁸ In addition, positron emission tomography and single photon emission CT studies have revealed a generalised decrease in cerebral perfusion and glucose metabolism in hypothyroid subjects,

which may be reversible with treatment.^{9–10} Meanwhile, a reversible reduction in wave activity on electroencephalogram has also been associated with hypothyroidism with psychiatric manifestations.¹¹

Treatment for myxoedematous madness relies primarily on thyroid hormone replacement. Synthetic T4 is usually administered orally as a once daily dose. Thyroid stimulating hormone levels should be monitored and the dosage adjusted accordingly. The neuropsychiatric sequelae of hypothyroidism take longer than the physical features to resolve and, in some cases, may persist despite appropriate treatment, due to irreversible damage secondary to chronic metabolic changes.

Learning points

- ▶ The wide variety of symptoms and their potential subtle manifestations make hypothyroidism a diagnosis that is easy to miss.
- ▶ A delay in effective treatment may result in irreversible metabolic changes; thus, recognition of thyroid deficiency early in its course is essential.
- ▶ Endocrinopathies, including thyroid hormone dysfunction, should be considered in all patients presenting with psychiatric symptoms.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Azzopardi L, Murfin C, Sharda A, De Silva N. Myxoedema madness. *BMJ Case Reports* 2010;10.1136/bcr.03.2010.2841, date of publication

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