

## Letter to the Editor

# Recognizing hypothyroidism from a neurologist eye: tips and tricks

Sir,

Hypothyroidism the most common endocrine disorder of adults with its protean neurological, neuropsychiatric and neuromuscular manifestation needs special attention in clinical practice as majority of these symptoms can be reversed on timely administration of levothyroxine and attainment of euthyroid state. Thyroid hormones have critical influence on integral growth, development and functioning of central nervous system. Apart from usual clinical symptoms (especially in females) of constipation, fatigue, weight gain, cold intolerance, bradycardia and menstrual irregularities, the persistent low thyroid hormones can present with wide range of neurological complications like mononeuropathy (carpal tunnel syndrome) and polyneuropathy, cerebellar ataxia, dementia, psychosis, coma, encephalopathy (Hashimoto's) as well as myopathies.<sup>1</sup>

During the critical period of nervous system development thyroid hormone deficiency may lead to permanent deficit in learning, intelligence and sensory motor functioning as in cretinism. However congenital hypothyroidism is uniquely treatable cause of mental retardation if diagnosed and treated early by replacement levothyroxin therapy.

Varied Neuropsychiatric manifestations like impaired attention, lethargy, anxiety, poor concentration, psychomotor retardation and even dementia are part of extended spectrum of hypothyroidism in adults.<sup>2</sup> Hypothalamic pituitary axis is involved in pathogenesis of these symptoms. At times a nonspecific, continuous, non-pulsatile headache get exacerbated by underlying hypothyroidism which respond well to hormone replacement therapy.<sup>3</sup>

Almost one third adult hypothyroid patients develop gradually progressive cerebellar ataxia mostly associated with auto immune or Hashimoto's thyroiditis. In a good number of patients this is a reversible clinical entity with restoring euthyroid state early in course of disease. As the disease advances, the effect of thyroxine on reversibility of ataxia gradually decreases.<sup>4</sup> Although uncommon but a potential reversible dementia of subcortical nature presenting as apathy and cognitive slowing is a feature of long standing hypothyroid state. The longer the dementia remains undiagnosed, the worse the outcome even after adequate replacement by levothyroxine.<sup>5</sup>

Hypothyroid state has special prediction for neuromuscular system. About 30% of hypothyroid female develop median nerve entrapment mononeuropathy across

wrist (Carpal tunnel and syndrome - CTS) which typically manifest as tingling, numbness, paresthesias, retrograde pain in arm. The symptoms tends to exacerbate in night. It is unilateral to start with but soon become bilateral. Accumulation of myxoedematous tissue in carpal tunnel and swelling of the synovial membrane around tendons is the explained pathogenesis. A nerve conduction study (NCV) is the gold standard in assessment of CTS. Many times a neuroimaging (MRI) of wrist is required for an alternate diagnosis.<sup>6,7</sup>

In good number of cases replacement therapy with levothyroxine may produce considerable improvement in 6-8 week duration. In advanced cases with established thenar atrophy surgical decompression of median nerve may solve the issue. Less commonly large fibre polyneuropathy presenting as reduced vibration and proprioception, distal paresthesias and lancinating pains, with diminished jerks and typically slow and delayed ankle jerk (hung up reflex) is encountered. This slow relaxation is due to disturbances in energy transfer with in muscle rather than slowing in neural pathways.<sup>8</sup>

Muscle affliction by hypothyroid state ranges from asymptomatic CK elevation to overt muscle complaints like myalgia, cramps and severe muscle weakness especially proximal muscle (proximal myopathy). The muscle enzymes are typically raised coupled with altered thyroid function tests with paucity of histological changes in muscle biopsy. The electromyogram (EMG) reveals short duration, low amplitude, myopathic muscle unit potentials without spontaneous activity. The clinical reversal is attained with euthyroid state.<sup>9</sup> Uncommonly muscular pseudohypertrophy, weakness and slowness in adults (Hoffman's syndrome) or in infants (Kocher-Debre-semelaigne syndrome) is also attributed to hypothyroid state. Hypothyroidism also act as a risk factor for statin-induced myopathy (SIM) in adults.

Myxoedema come is uncommon but life threatening complication of long standing untreated hypothyroidism with high mortality (20-30%). A decreased mental state coupled with cerebellar signs, seizures, hypothermia, hypotension, hypoventilation & bradycardia are the cardinal clinical features. Severe hypothermia (core body temperature <90° Fahrenheit) have poor prognosis. Prompt institution of thyroid hormone along with glucocorticoids and supportive cardiopulmonary measures may prove useful.<sup>10</sup> Another encephalopathy (Hashimoto encephalopathy) associated with autoimmune thyroiditis manifesting as altered conscious state, stroke like episodes, seizure, psychosis, hallucination, abulia and

cerebellar ataxia is also seen with high titres of antithyroglobin and peroxidase antibodies in serum. High dose of steroids may dramatically reverse the condition.<sup>11</sup>

Thus most of the neurological complications of longstanding or untreated Hypothyroidism can be reversed with timely detection and administration of levothyroxin and attainment of euthyroid state.

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