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Hypothyroidism: A Driving Force behind Accidents?.

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ABSTRACT

Hypothyroidism is a condition caused due to decreased production of thyroid hormones. The clinical presentation of hypothyroidism depends on the severity of the thyroid hormone deficiency and the acuteness of its development, regardless of its cause.-The diverse clinical manifestations of hypothyroidism occur due to-

- Accumulation and deposition of mucoplysaccharides and glycosaminoglycans in the interstitial spaces of various tissues resulting in the clinical symptoms of macroglossia, hoarseness of voice, slurring of speech, edema and peripheral neuropathy.
- A generalized deceleration of the metabolic processes leading to bradycardia, fatigue, somnolence, drowsiness, cold intolerance, slow movement, weight gain, delayed relaxation of deep tendon reflexes, and bradycardia.

Driving regulations in several countries screen for disorders like epilepsy, color blindness, type 1 diabetes and have guidelines issued before granting licenses to such individuals that may cause harm to themselves and the public. However, there are no standard guidelines and recommendations to rule out and screen for hypothyroidism prior to issuing a driving license. As hypothyroidism can virtually affect all the organ systems, and is characterized by diminished cognitive, fine motor performance and slowed reaction time, activities like driving can be disastrous. Thus, from a public health perspective routine screening for hypothyroidism must be made mandatory prior to issuing driving licenses. Keeping in mind a possible potential public and personal health hazard regarding impaired hypothyroid drivers, We hereby present a case report of a heavy motor vehicle driver presenting with features of severe myxedema sufficient to impede the safe operation of motor vehicles and could have been catastrophic.

Keywords: Hypothyroidism, Driving

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CASE DETAILS

History

A 40-year-old male, with no known medical illnesses, a heavy motor vehicle driver employed with the state public transport authority for the past ten years reported to the ENT department with decreased hearing and bilateral pedal edema since two months. After diagnosing mild bilateral conductive hearing loss he was referred to medicine for further evaluation of pedal edema. Examination revealed a moderately built and nourished middle aged male with-

- Periorbital edema
- Hair loss from the lateral aspect of bilateral eyebrows (madarosis)
- Minimal slurring of speech
- Bilateral mild non pitting type of pedal edema
- Macroglossia

Vital signs revealed a pulse rate of 50 per minute, blood pressure of 120/80 mm of hg and temperature 37 degrees C.

On further enquiry, he complains of weight gain, cold intolerance, difficulty in driving due to increased fatigue and drowsiness, day time somnolence while driving that progressively worsened over the last 3-4 months. Neurological examination showed slowness in response to answering with decreased attention and also minimal clumsiness in performing finger-nose testing for coordination. Ankle jerks bilaterally elicited a delayed relaxation. A possibility of hypothyroidism was considered with the clinical history and examination findings.

Investigations

- TSH >100 IU/ml(normal 0.5-5 IU/ml)
- T3-1.1 (normal 2.3-4.2 pg/ml)
- T4 -2.8 reduced (normal 4.5-12.5 mcg/dl)
- CK-4500 (normal 60-180 IU/L)

Management

Patient was started on Thyroxine 100mg once daily on empty stomach. He was advised to refrain from driving and to return for follow up after 1 month.

Follow up

One month after starting thyroxine his TSH reduced to 20 IU/ml. Patient reported drastic improvement in his symptoms with weight loss of 4kgs, decreased edema and improvement in hearing. His thyroxine dose was optimized and asked to review after 2 months.

DISCUSSION

Prolonged hypothyroidism can lead to the infiltration of many body tissues by hyaluronic acid and other glycosaminoglycan's. This material is hygroscopic, producing the mucinous edema that is responsible for the boggy and non pitting edema that is apparent around the eyes and on both the feet. It also causes enlargement of the tongue and thickening of the pharyngeal and laryngeal mucous membranes resulting in thick, slurred speech and hoarseness. Numbness and tingling of the extremities, more commonly the fingers maybe caused by the compression of the median nerve by the deposition of glycosaminoglycans in and around the nerve (entrapment syndrome). Mixed hearing loss is present due to myxedema of the 8th cranial nerve and serous otitis media[1,2].

In addition, hypothyroidism may lead to slowness of movements due to the stiffness and aching of the muscles and delayed muscle relaxation. The reduced cardiac output due to the loss of inotropic and

chronotropic effects of thyroid hormones can be deleterious and eventually precipitate syncope and confusion attacks. Neuro-psychiatric manifestations include depression, dementia and cerebellar manifestations[3].

Severe hypothyroidism can lead to slowness and increased reaction timing such as in application of emergency brakes. Depression, cognitive impairment was present and fine-motor performance of hands were slowed and diminished. People with significant hypothyroidism can experience impaired driving similar to those who are driving when intoxicated by alcohol. According to studies, braking times increased in hypothyroidism by 8.5%, which is equivalent to the effects from a blood alcohol level of 0.08g/100ml (Indian legal driving limit is 0.03g/100ml)[2].

CONCLUSION:

Driving is a complex process involving fine motor activities and coordination. Severe myxedema can lead to diminished processing and reaction time, blunting of fine motor performance and can be is deleterious for driving. Thus, from a personal and a public health perspective, screening of drivers for hypothyroidism should be made mandatory before the issuing of license and followed up for hypothyroidism at regular intervals.

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