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Multivitamins use and abuse: a threat for cardiovascular morbidity

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ABSTRACT

Hyperthyroidism is a disease of self destructive auto antibodies but sometimes excess of ingredients for thyroid hormone synthesis may result in this peculiar state of high cardiovascular morbidity and even mortality. Unknowingly and with easier availability of over the counter drugs especially multivitamins may pose a threat to otherwise healthy population suffering from lifestyle lacunae. We present this case of a woman severely progressing towards cardiovascular morbidity due to hyperthyroidism following intake of such multivitamins. The aim is to bring forth the need for spreading more awareness regarding the use of such over the counter drugs in India which sometimes instead of benefiting the patient may actually worsen the condition.

Keywords: Hyperthyroidism, over-the-counter drugs, lifestyle lacunae

1. INTRODUCTION

Most of the patients present to the medical OPD with the non specific complaints of malaise and weakness. A profile of tests is conducted to identify the cause and in absence of any pathological finding multivitamins is usually prescribed. Moreover, with growing knowledge and awareness, the use of over the counter drugs has strangely increased (Shroti et al., 2011). Thyroid disorders have become an epidemic worldwide and are among the commonest endocrine disorders. Stress, anxiety and palpitations are the characteristic symptoms of hyperthyroidism which predominate in the competitive life of urban society. Hyperthyroidism overt or subclinical has its consequences which if left untreated can have fatal outcome. This case emphasizes on the use of over the counter drugs like multivitamins in the pathogenesis of thyroid illness.

2. CASE REPORT

A 30 year old married female presented to the medicine OPD with the complaints of generalized body ache, reduced stamina and lethargy. She complained of increased thirst, fluctuating body weight, cold intolerance and frequent pain

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in calf muscles. Her menstrual cycle was regular and of 25 days. Her bowel habits were erratic with constipation off and on. Past history reveals the she had treatment for pelvic inflammatory disease 1 year back. She was a non-smoker but used to take alcohol occasionally and dietary habits were purely vegetarian. Her mother was a known diabetic. There was no history of any thyroid illness or hypertension in family. No history of any psychiatric illness. No history of any drug intake. On general examination, she was afebrile and her PR, BP, RR was within normal limits. No lymphadenopathy, icterus or pallor noticed. On clinical examination, thyroid was not palpable. Abdomen was soft to touch with normal bowel movements. BMI was 23 kg/mt^2. Investigations reported Hb = 12.6 gm%, FBS = 82 mg/dl, serum Vit D= 18 ng/ml, serum Vit B12 = 350 pg/ml, fasting lipid profile (TG= 92 mg/dl, T.CHOL= 110 mg/dl, HDL= 56 mg/dl, LDL= 36mg/dl), serum calcium= 10 mg/dl, serum phosphorous= 3.5 mg/dl, serum total protein= 7.2 g/dl, serum albumin= 4.2 g/dl, serum ALP= 82 IU/L, serum TSH= 3.5 µIU/ml. No abnormality was detected on ultrasound. Chest x-ray was also clear. The patient was advised multivitamins for symptomatic improvement. Calcitriol treatment was also started with a sachet everyday with milk for 6 days and then weekly for 6 weeks. She was highly complacent with the therapy and reported overall improvement in her symptoms with increased stamina. She was advised to take multivitamins for 20 days and review for follow up. But as the patient felt symptomatically better she continued to take multivitamins on a regular basis. After 4 months, she came to the O.P.D again with fresh complaints of heat intolerance, increased palpitations especially on lying down, hot flushes and increased sweating. On examination, her PR, BP and RR were normal. Blood investigations revealed improved levels of serum vitamin D and serum vitamin B12. But to our astonishment, her lipid profile was grossly deranged with serum total cholesterol = 250 mg/dl, serum triglycerides = 160 mg/dl, serum HDL = 52 mg/dl and serum LDL = 166 mg/dl. Thyroid profile was repeated and found to be deranged with serum TSH= 0.20 µIU/ml, serum FT3= 3.76 pg/ml, serum FT4= 1.34 ng/dl and negative Anti-TPO antibodies. ECG was normal. No lump or palpable mass was found in the region of thyroid gland. Her findings were suggestive of hyperthyroid state in spite of a healthy lifestyle she was following. This prompted us to probe her further if she resorted to any other form of medications like ayurvedic or homeopathic remedies. It was found that she had shifted to another set of multivitamins (based on recommended daily allowance for American population) a month back, which was suggested by some family member who came from abroad. On further evaluation we found that these multivitamins had iodine concentrations beyond the daily recommended levels. She was advised to immediately stop those multivitamins and her investigations were repeated after 2 months again. All her blood parameters were within normal range again. Patient was advised to take multivitamins suited to her needs as advised and suggested not to shift to any other drugs without consultation.

3. DISCUSSION

Hyperthyroidism is characterised by low levels of serum TSH and rising levels of FT3 and/or FT4. Thyroid hormones exert negative feedback inhibition on the release of TSH from pituitary, which is sensitive to even minor changes in levels of these hormones and responds logarithmically. As a result, TSH levels might fall below the normal range even when serum FT3 and/or FT4 levels are still within the normal range. This is defined as "subclinical hyperthyroidism". TSH levels i) below 0.01 µIU/ml in the presence of normal FT3 and/or FT4 levels or ii) TSH levels between 0.01 - 0.36 µIU/ml in the presence of raised FT3 and/or FT4 levels define overt hyperthyroidism. A community survey suggested prevalence of subclinical and overt hyperthyroidism in 1.6% and 1.3% of subjects in Indian state (Usha et al., 2009).

Grave's disease has been the most common cause of hyperthyroidism. Other frequent causes include over treatment with thyroxine in hypothyroid patients or excessive TSH suppression with L-T4 for treatment of benign nodular thyroid. Iodine is an important mineral required for the formation of thyroid hormones. In fact, thyroid is the only organ which can trap iodine in ionised form. If not consumed in sufficient amounts, its deficiency results in goitre. In India, the entire population was prone to Iodine deficiency disorders due to deficiency of iodine in soil before the salt fortification programme was initiated. Since 1989, the sale of unfortified salt has been banned in the capital city. Moreover, Delhi does not lie in the Himalayan endemic goitre belt (Karmarkar et al., 1974). Still, few cases of goitre had been reported in post iodization phase (Marwaha et al., 2003). Salt adequately supplemented with iodine based on recommended allowances for a specified population is enough to form sufficient amount of thyroid hormones. In 1994, WHO released its document on assessing the indicators of iodine deficiency and their control through salt iodization. In 2004, revised guidelines were given on assessment of iodine deficiency disorders and monitoring of their elimination. It was reported that iodine nutritional status improved worldwide following fortification of salt with iodine (WHO, 2001). Supplements or multivitamins containing iodine should be used with extreme caution in areas not deficient in iodine or receiving fortified food products as excess of iodine consumption may result in hyperthyroidism which is associated with higher morbidity than hypothyroidism (Roti et al., 2001). Studies have shown that consumption of more than required amounts of iodine predisposes to higher risk of thyroid problems (Xiaochun et al., 2011).

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Hyperthyroidism exerts significant effects on cardiovascular system. It is usually associated with rapid heart rate, palpitations, anxiety symptoms, tremors of hands, dyspnoea and even arrhythmias like atrial fibrillation. It may result in increased left ventricular mass and decreased exercise tolerance. The effects on metabolism may result in hyperglycemia and deranged lipid profile. A more severe form of toxicosis is "thyroid storm" which may result in increased cardiovascular morbidity and mortality. Even after several months to up to 10 years after a euthyroid state is established, some individuals may still experience the persistence of cognitive symptoms (Bradley et al., 2012).

Over the counter drugs (OTC) are frequently consumed without any prescription and proper knowledge of drug dosage or side effects. In fact, it has been reported that literate people are more frequent users of OTC than illiterate people (Dinesh kumar et al., 1995). A study showed that sharing of OTC drugs was more frequent among family members and generalised weakness prompted self medication (Devang et al., 2013). In the absence of sufficient knowledge and no regulatory guidelines for the use of OTC drugs in India, patients are prone to more side effects than the actual benefits from these medications.

We conclude with the thought that some guidelines must be established for the use of OTC drugs and more awareness shall be spread regarding their use in an attempt to prevent the fatal outcomes and increased morbidity in an otherwise apparently healthy individual.

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