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Fucus vesiculosus induced hyperthyroidism in a patient undergoing concomitant treatment with lithium

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Introduction. *Fucus vesiculosus* is a marine alga rich in iodine, which is being used in alternative medicine as a laxative, diuretic, and as a complement for weight loss diets.

Case report. We report the case of a 60-year old male patient, diagnosed with bipolar disorder and under treatment with lithium concomitantly with a herbal preparation, including *Fucus vesiculosus*, as a laxative. He developed hyperthyroidism that remitted once the herbal preparation was withdrawn.

Conclusion. *Fucus vesiculosus* may cause hyperthyroidism given its high iodine content. Herbal preparations should be taken in account when treating a patient due to the possibility of adverse effects and interactions with other drugs.

Key words:
Fucus vesiculosus, Lithium, Hyperthyroidism

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Hipertiroidismo inducido por la ingestión de Fucus vesiculosus en un paciente en tratamiento concomitante con litio

Introducción. el *Fucus vesiculosus* es una alga marina rica en iodo, que se está usando en la medicina alternativa como laxante, diurético y como complemento en las dietas para perder peso.

Caso clínico. Referimos el caso de un paciente varón de 60 años, diagnosticado de trastorno bipolar y en tratamiento con litio que simultáneamente tomaba una preparación herbal en la que se incluía el *Fucus vesiculosus* como laxante, y que desarrolló un hipertiroidismo que remitió una vez la preparación herbal fue retirada.

Conclusiones. El *Fucus vesiculosus* puede producir hipertiroidismo debido a su alto contenido en iodo. Las preparaciones herbales deben ser tenidas en cuenta cuando tratamos a un paciente debido a la posibilidad de efectos adversos e interacciones con otros fármacos.

Palabras clave:
Fucus vesiculosus, Litio, Hipertiroidismo

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INTRODUCTION

Fucus vesiculosus is a marine alga used in alternative medicine as a laxative, diuretic and as a complement for slimming diets. This plant is very rich in iodine, having up to 0.05% of iodine[1]. For this reason, it may cause hyperthyroidism pictures. This is an over the counter product, that does not need any type of prescription.

On the other hand, it is well known that lithium may cause thyroid disorders, mainly hyperthyroidism[2]. The mechanism seems to be inhibition of thyroid hormone uptake[3]. The lithium capacity to cause hypothyroidism is still controversial[4, 5]. Some authors reject this hypothesis[6] and other authors report the same incidence of hyperthyroidism as in the general population[7]. In fact, lithium may be used in the treatment of the hyperthyroidism, although it would be a second choice drug for those patients who cannot tolerate the conventional drugs or who do not achieve the desired response[7]. On the other hand, lithium is the most used drug in our setting for treatment of bipolar disorder, being used in more than 70% of the patients[8].

We present the case of patient who has been undergoing lithium treatment for many years and who has developed hyperthyroidism while taking *Fucus vesiculosus* concomitantly.

CASE REPORT

A case of a 60-year old male patient is presented. He was diagnosed with bipolar disorder in 1992. Since then he has undergone treatment with lithium (lithium carbonate 1000 mg/day) as single drug for his disorder. He has progressed well, with lithemias ranging between 0.6-0.9 mEq/L.

In November 2001, he had an acute myocardial infarction. Since then he has been taking ramipril 1.25 mg BID, bisoprolol 2.5 mg/day, simvastatin 10 mg/day and acetylsalicylic acid 100 mg/day for his cardiac disease.

During the last 6 years, he has been operated several times for an anal fistula, which is why he started taking this herbal product in 2003 for laxative purposes. This compound contains, besides 0.125 g of *Fucus vesiculosus* per tablet, *Rhamnus purshiana* (sacred bark) 0.170 g and *Frangula 0.222 g* per tablet. The patient had been taking it regularly (once a day), without knowing the possibility of causing hyperthyroidism as it was not considered a possible adverse effect.

The thyroid hormones were controlled every 4 months and were normal until 2006. After that, he developed a very mild hypothyroidism (eg: in March 2006: free T4: 1.15 ng/dL [normal levels: 0.9-1.7], TSH: 5.61 mIU/L [normal levels: 0.27-4.2],

He developed hyperthyroidism in April 2008: T4-L: 2.13 ng/dL and TSH 0.01 mIU/L. The anti-thyroid antibodies were negative and goiter was not palpated.

The *Fucus* was immediately discontinued. He was prescribed 10 mg/day of metamizole for a month and the treatment with lithium continued without interruption. In May 2008, the obtained levels were as follows: T4-L: 1.45 ng/dL and TSH: 0.05 mIU/L. Mild sub-clinic hypothyroidism reappeared in the successive thyroid analyses in these last years, the patient currently being under treatment with levothyroxine 25 mcg/day.

CONCLUSIONS

Fucus vesiculosus accumulates iodine in its structure, so that it may stimulate the synthesis of the thyroid hormone and cause hyperthyroidism. Other marine algae as Kombu were previously related to a reversible hyperthyroidism event in a woman with euthyroid multinodular goiter[9]. Some marine algae have also been related to Hashimoto thryoiditis[10].

In turn, lithium has inhibitory effects mainly in the secretion of the thyroid hormone, with similar actions as inorganic iodine. Other hypothyroidism production mechanisms have been described such as synthesis inhibition and thyroid hormone secretion, inhibition of the iodotyrosine coupling and modification of the thyroglobulin structure[3, 4].

It has also been described that other drugs as salicylates at high dose may inhibit the binding of the T3 and T4 in the receptors of the carrier proteins, which may cause a decrease in the T3 and T4 serum concentration levels[5].

Fucus vesiculosus seems to be able to cause hyperthyroidism in patients who are taking lithium concomitantly[11]. Important reactions and adverse effects have been described in other herbal products as the St. John´s wort[12], Ginkgo[13]. Kava[14] and valerian[15]. Given the increase in the number of patients who express their preference for herbal products, we should not forget to ask about any type of tablet or herbal medicinal products they may be taking. It is also necessary to know more about these types of substances in order to be able to prevent the possible interactions or side effects.

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