

Subacute Hyperthyroidism Induced by Treatment with Lithium Salts

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Abstract

Lithium treatment is usually indicated in bipolar disorder. It is associated with hypothyroidism and very rarely with hyperthyroidism. We report here the results of the exploration of a case of thyrotoxicosis occurring during treatment with lithium salts. This was a 16-year-old patient with ongoing lithium treatment for two and a half years who presented with a thyrotoxicosis syndrome without a context of iodine overload or an episode of anterior cervical pain that could suggest subacute thyroiditis or orthopathic sign. The assessment of the exploration of this patient reveals biological hyperthyroidism without anti-TSH receptor antibodies, a normal ultrasound, and white scintigraphy which makes it possible to evoke the diagnosis of subacute thyroiditis (absence of the context of iodine overload). Note the interest in a thyroid assessment before and during treatment with lithium salts. Moreover, scintigraphy occupies a place of choice in the exploration of hyperthyroidism, particularly in the context of normal thyroid ultrasound imaging.

Keywords

Hyperthyroidism, Lithium, Scintigraphy

1. Introduction

Lithium treatment is usually indicated in bipolar disorder. It is associated with hypothyroidism and very rarely with hyperthyroidism. It is a mood stabilizer indicated in the curative treatment of episodes of mania and hypomania, but also as a preventive treatment for these episodes. Its mechanism of action is not yet clearly and fully elucidated. It would modulate the synaptic concentration of certain neuromodulators. It is always necessary to inform the patient about the benefits and constraints of this treatment and to carry out a pretherapeutic as-

assessment. The patient must in any event report any symptoms that may be related to the lithium treatment. The side effects of lithium are numerous and dominated by polyuro-polydypsic syndrome, nausea, vomiting, and weight gain. It is also associated with hypothyroidism and very rarely hyperthyroidism. We report here the results of the exploration of a case of thyrotoxicosis occurring during treatment with lithium salts.

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2. Observation

16-year-old patient with ongoing lithium carbonate treatment for two and a half years who presented with thyrotoxicosis syndrome with loss of 3 to 4 kg, palpitations and thermophobia without tremor or diarrhea. Note the absence of a context of iodine overload, an episode of anterior neck pain that could suggest sub-acute thyroiditis or any sign of orthopathy.

Hormonal assessment: TSH indosable, Increase in free T3 to 9.5 pmol/l and free T4 to 23.5 pmol/l for a norm between 12 and 22. Negative TSH anti-receptor antibodies.

Thyroid ultrasound imaging: Thyroid of normal volume, is oechogenic, homogeneous, weakly vascularized without any nodular or dystrophic structure found. Absence of cervical adenopathy. Normal morphological appearance. (Figure 1)

Thyroid scintigraphy: Static image taken in anterior view 20 to 30 minutes after intravenous injection of 111 MBq of pertechnetate on a GAEDE camera.

Examination revealed a thyroid in an anterior cervical position. The rate of pertechnetate uptake at 20 minutes was lowered to 0.4% (normal values 1% to 3%) with diffuse attenuation of tracer uptake. Absence of individualization of hypofixing or hyperfixing focus. Unremarkable surrounding background noise. (Figure 2)

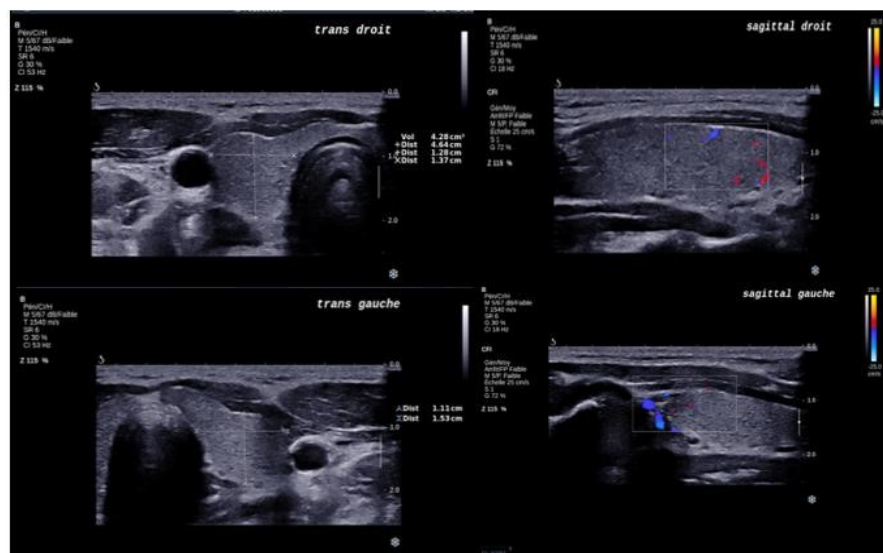


Figure 1. Thyroid ultrasound imaging.

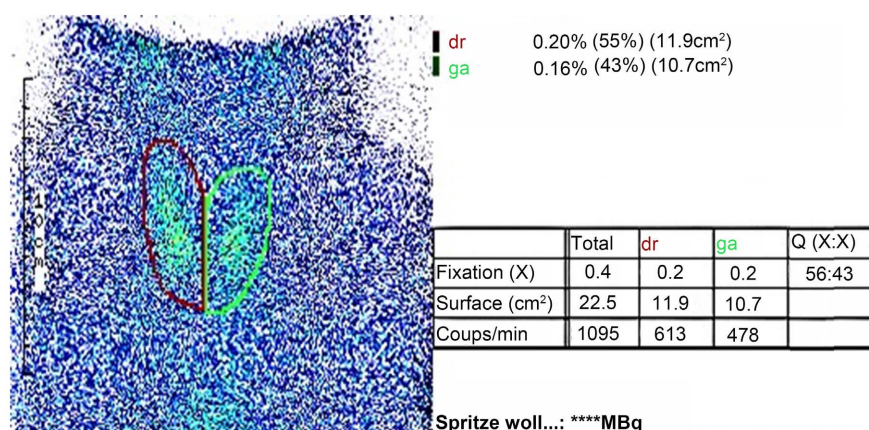


Figure 2. Thyroid scintigraphy.

3. Discussion

The anti-manic properties of lithium were demonstrated in 1949 by the Australian John CADE. However, the absence of any plasma monitoring prevented its use given the lethality of the doses used at the time. It was thanks to the work of the Danish, Mogens SCHOU, in the 1960s that this treatment was later fully rehabilitated. Plasma lithemia provided valuable information on efficacy and safety of use. [1] Lithium is indicated in the basic treatment of bipolar disorders (prevention of relapses) and in the treatment of manic phases (phases of excitement). It is also used in the prevention of other psychic disorders. Lithium is recommended as first-line treatment in bipolar disorder by many guidelines. [2] Fifty years after it began to be used, knowledge about it continues to grow. Yet, paradoxically, its use is declining. [3] In adolescents, lithium salts are more frequently prescribed when psychotic signs are part of the clinical picture. [4] Some authors suggest that curative or prophylactic treatment with lithium salts can be administered to adolescents and children with the same medical precautions as those recommended for adults. [5] Their use is associated with thyroid abnormalities commonly described in the literature. These are essentially hypothyroidism and/or autoimmune thyroiditis. [6] Lithium-induced thyrotoxicosis is rarely described. One case out of 57 patients in a recent prospective study. [7] Hyperthyroidism due to lithium salts was first reported by Rosser and colleagues in 1976. The frequency is higher in women and increases with age. [8] The mechanisms explaining the thyroid impact of lithium are poorly understood. Lithium would lead to a decrease in iodine uptake by the thyroid, alter its integration in the form of iodotyrosines, and interfere with the release of thyroid hormones into the circulation, thus explaining the frequency of hypothyroidism. [9] In the observations of hyperthyroidism, lithium would have a direct responsibility in the destruction of follicular cells. Usually occurs after prolonged treatment for several years. Hyperthyroidism due to the release of thyroid hormones can also be observed when the dose of treatment is reduced or stopped. [10] The etiology may correspond to granulomatous thyroiditis, silent thyroiditis, toxic no-

dular goiter or basedow disease. [11]

Note that for the case that we are presenting, the assessment of the exploration of this patient reveals biological hyperthyroidism without anti-TSH receptor antibodies, a normal ultrasound, white scintigraphy which makes it possible to evoke the diagnosis of subacute thyroiditis (absence of the context of iodine overload). Note the absence of stigma of antithyroid autoimmunity. Note the interest in a thyroid assessment before and during treatment with lithium salts and endocrinological monitoring if necessary. Moreover, scintigraphy occupies a place of choice in the exploration of hyperthyroidism, particularly in the context of normal thyroid ultrasound.

Note that a thyroid assessment before and during treatment with lithium salts is necessary. This requires a measurement of the TSHus and the search for anti-TPO antibodies in pre-therapy and control of the TSHus at three months and every year during the treatment. In all cases, endocrinological follow-up is necessary for the event of an anomaly of the TSHus. [12]

The management of these hyperthyroidisms induced by the treatment with lithium salts requires the discontinuation of the treatment and the initiation of a specific treatment which, in turn, depends on the underlying thyroid pathology.

4. Conclusion

The occurrence of hyperthyroidism induced by treatment with lithium salts is rarely described. These are disparate cases of varying etiologies. Our presentation corresponds to a picture of subacute thyroiditis in a teenager after two and a half years of treatment. It confirms that hyperthyroidism can occur in adolescents as in adults during treatment with lithium salts. Once again the pre-therapeutic evaluation of the thyroid function and its monitoring during the treatment is necessary for the good conduct of the treatment with lithium salts. Moreover, scintigraphy occupies a place of choice in the exploration of these hyperthyroidisms, particularly in the context of normal thyroid ultrasound.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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