Recurrence of Thyrotoxicosis during Hemodialytic Treatment in a Patient with Chronic Renal Failure

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Dear Sir,

Thyroid abnormalities are often encountered in chronic renal failure. Generally it is believed to cause an increased incidence of goiter as well as of hypothyroidism and ‘sick euthyroid syndrome’ [1]; on the other hand thyrotoxicosis is very unusual: till now only 5 well-documented cases have been reported [2-6].

This rarity may represent an important beneficial adaptation to the disease [7] and may well be connected with a strong antithyroidal activity of one or more toxic metabolites which accumulate in renal failure. There is probably a reciprocal relationship between thyroid function and uremia: on the one hand the remedial effect of acute renal failure in a case of thyrotoxicosis has been described [7], on the other hand the recurrence of thyrotoxicosis after correction of uremia by peritoneal dialysis has been reported [8].

It seemed appropriate to report a case of thyrotoxicosis recurring after the beginning of hemodialytic treatment for chronic renal failure, both because of the exceptionality of the occurrence and since it seems to be the first case in which this pathological form was treated with methimazole. The patient, a 69-year-old female, clearly suffered from toxic multinodular goiter in 1982. She was treated with methimazole for about 1 year, which resulted in the disappearance of clinical symptomatology and normalization of thyroid hormones, however with the exception of thyrotropin which remained at lower levels. The patient no longer complained of any symptoms consistent with thyroid hyper-function and the periodical hormonal checkups were unremarkable: the last control was carried out in April 1994.

In 1992 renal failure due to chronic glomerulonephritis was diagnosed and in June 1994 hemodialytic treatment for aggravation of renal failure was started. Three to four weeks after starting hemodialytic treatment the patient, who had never used drugs interfering with thyroid function, experienced nervousness, insomnia, weakness, palpitations and weight loss. Objectively, there was evidence of multinodular goiter, restlessness, hand tremor, excessive sweating, tachycardia (94 beats/min); blood pressure was 150/90 mm Hg. No exophthalmos and no abnormality in heel tendon reflexes were present. Thyroid tests disclosed a T4 level of 121.83 µg/l (normal values: 45-109), a fT4 level of 20.17 ng/l (normal: 5-20), a T3 level of 1.75 µg/l (normal: 2.3-4.2), a TSH basal level of 0.05
mIU/l (normal: 0.4-4) and of 0.08 after TRH test (200 µg i.v., TRH Ares Serono, Milan); the antithyroglobulin antibodies (normal: < 360 IU/ml) were indeterminable; antimicrosomial antibodies were 50 IU/ml (normal < 200), antithyperoxi-dase antibodies 3.74 IU/ml (normal: < 13), reverse T3 0.54 µg/l (normal: 0.09-0.35), Tg 163.62 µg/l (normal: 5-25). The thyroid scan (99mTc) confirmed multinodular goiter and showed a marked radio-nuclide dyshomogeneity of uptake for the presence of multiple cold nodules and for the increase in global uptake index.

Treatment with methimazole (5 mg per os, 3 times a day) was started: after 1 month the patient was not complaining of the above-mentioned symptomatology any longer, with the exception of asthenia; the goiter appeared unchanged and the remaining objectivity normalized as well as the thyroid hormones (T3 = 0.98 µg/l; T4 = 44 µg/l; T4 = 9 ng/l); the TSH was unchanged (0.05 mIU/ l). Clearly, it was a recurrence of thyrotoxicosis: in fact, before dialysis the patient did not show any symptoms consistent with hyper-thyroidism and the thyroid hormones (the last control was performed 2 months prior to the beginning of the symptoms) were normal. We cannot help thinking that the dialysis is in some way responsible, through a so far unknown mechanism.

To our knowledge, this is the first case of thyrotoxicosis recurrence after starting a hemodialytic treatment for chronic renal failure. Previously, Absy and Ng [8] reported a similar case of thyrotoxicosis recurrence, however, after peritoneal dialysis treatment [8]. The treatment with methimazole was effective and free of unwanted side effects, just as the previously reported treatments with carbimazole [5] and propylthiouracil [6].

References