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Resistant Hyperthyroidism, Responses Dramatically to Adjunctive Oral Cholestyramine

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Abstract: *A few patients with hyperthyroidism are resistant to the conventional antithyroid medications. In several trials, cholestyramine has been used to sequester thyroid hormones in the intestine and when added as an adjuvant treatment to the conventional antithyroid drugs, leading to a more rapid decline in thyroid hormone levels.Here we report a 27-year-old female patient with Graves' disease who complained of thyrotoxic symptoms for 18 months that not responded even to a high dose of a combination therapy of Neomercazol, Propranolol and Prednisolone. On presentation, her T4 was19.3 (4.9 – 11.0µg/mL). We administer an oral cholestyramine (5g twice daily) as adjunctive therapy. After 1 week, the patient shows dramatic response, her T4 level became 10.6 (4.9 – 11.0µg/mL). Total thyroidectomy has been done after another one week of same treatment combination. The postoperative course was passed smoothly without complications.*

Keywords: *Resistanthyperthyroidism, Antithyroid medication, Cholestyramine*

1. INTRODUCTION

Patients with hyperthyroidism usually responding well to the conventional antithyroid medications.[1] If these drugs are failed or there is side effect, then surgery or radioiodine therapy must be considered.[2] When thyroidectomy or radioactive iodine therapy are the treatment options, then the patient should be treated first with antithyroid drugs like methimazole (MMI) or its pro-drug, carbimazoleor propylthiouracil (PTU) until his (T4) become normal or near normal to prevent complications like; thyrotoxic crisis or exacerbation of ophthalmopathy. Beta-blockers, corticosteroids, or inorganic iodide may also be used as adjunctive treatment for more prompt control.[3] Few patients with hyperthyroidism are resistant to antithyroid drugs and adjunctive therapy. Certain literatures reported that the cholestyramine, when used with antithyroid medication, produce a more rapid decline in serum thyroid hormone levels.[4-6] In this study we reported a case of resistant graves' disease that respond well to the adjunctive oral cholestyramine.

2. CASE HISTORY

A 27 years old female was diagnosed at a localclinic with grave's disease in November 2016. At that time, her TSH level was 0.005 (0.25 – 5µIU/mL), T3 was 7.39 (0.9 – 2.5 µIU/mL), T4 was 254 (60 - 120µIU/mL) and was prescribed propranolol tablet (10 mg three time daily) and Neomercazole tablet (10 mg three time daily).She was not compliant in regularly taking the medications and was not visit her doctor until August 2017. At that time, her TSH level was 0.015 (0.25 – 5µIU/mL), T3 was9.37 (0.9 – 2.5 µIU/mL), T4 was 278 (60 - 120µIU/mL) and was prescribed propranolol tablet (20mg three time daily) and Neomercazole tablet (15 mg three time daily). On September 2017, her TSH level was 0.05 (0.25 – 5µIU/mL), T3 was 3.9 (0.9 – 2.5 µIU/mL), T4 was 263 (60 - 120µIU/mL), the dose of Propranolol was increased to (40 mg three time daily) and the dose of Neomercazole was increased to (15 mg four time daily) and was prescribed prednisolone tablet (20 mg three times daily) as adjunctive therapy. On October 2017, her TSH level was 0.05 (0.25 – 5µIU/mL), T3 was 3.8 (0.9 – 2.5 µIU/mL), T4 was 320 (60 - 120µIU/mL) and was referred for radioactive iodine, but the patient was refused. She was consulte our local clinicon December 2017, was complaining of neck swelling, palpitation, nervousness, tremor, and exophthalmos. She was on Neomercazole (60 mg daily), Propranolol (120 mg daily) and Prednisolone (60 mg daily). The patient claimed that she took her medications regularly since August 2017. On examination;

her temperature was 37 C^{o,} pulse rate was 110 beat/ minutes, blood pressure was 130/70 mmHg. Her ultrasound examination revealed a moderate size diffused goiter. Her TSH level was 0.01 (0.38 –4.31µIU/mL), freeT3 was 20.57(0.7 – 45pmol/mL), free T4 was 69.14 (9 – 20pmol/mL), her liver function test was normal. At that time we administered oral cholestyramine powder (4g twice daily) as adjuvant therapy and we told the patient that this treatment is a temporary treatment and given an instruction to be seen after 1 week for follow-up and to repeat the thyroid function test and when the T4 become normal or near normal, the surgery should be done without delayed, but unfortunately; the patient did not follow our instructions and was escape from the follow-up. On May 2018, she was consulted me again; complaining of; palpitation, tremor, nervousness. She gave history that; she took her medications regularly and became very well until before the last month when she stopped taken the oral cholestyramine, but continued Neomercazol (60 mg daily), Propranolol (120 mg daily) and Prednisolone (60 mg daily). Her TSH level was 0.01 (0.38 –4.31µIU/mL), T3 was 6.29 (0.79 – 1.58ng/mL), T4 was 19.3 (4.9 – 11.0µg/mL), her liver function test was normal. We prescribed an oral cholestyramine (5g twice daily) in addition to the previous medications. After one week; there is a dramatic clinical and biochemical response to the treatment, her TSH level was 0.01 (0.38 –4.31µIU/mL), T3 was 1.27 (0.79 – 1.58ng/mL), T4 was 10.6 (4.9 – 11.0µg/mL). At the end of the second week of treatment, her T3 was 0.59 (0.79 –1.58ng/mL), T4 was 6.7(4.9 – 11.0µg/mL). We continued same regime of treatment with reduction of the doses of Neomercazol to (10mg three time daily), Propranolol to (20mgtwo time daily), Prednisolone to (10mg three time daily) and the cholestyramine to (5g once daily). Total thyroidectomy was done at the end of the third week of the treatment and the postoperative course was passed smoothly without complications.

3. Discussion

The thyroid hormones are conjugated to glucurunides and sulfates in the liver and then excreted in the bile. Free hormones are released in the intestine and then reabsorbed. A few amounts of these hormones are excreted in the stool.[7]

Cholestyramine, an ionic exchange resin that can sequesters the bile salt in the intestine and increases its fecal excretion. It has been used primarily to lower serum cholesterol and in treatment of itching those results from hepatic cholestasis.[8, 9]

In several trials, cholestyraminehas been used to sequester thyroid hormones in the intestine and when added as an adjuvant treatment to the conventional antithyroid drugs, leading to a more rapid decline in thyroid hormone levels.[4 - 6]

In this study, our patient has long history of resistance to a high doses of a combination therapy of Neomercazole, Propranolole and prednisolone and when oral cholestyramine administered as adjunctive therapy, the patient show a dramatic rapid response and the thyroid hormones completely normalized within one week and the total thyroidectomy has been done after 2 weeks from the start of treatment with a cholestyramine.

The most common frequent reported side effects of cholestyramine are the constipation and abdominal discomfort which can be prevented by encourage high fiber diet and increased amount of water intake.[10]Our patient tolerate the treatment very well and complaining only from mild abdominal discomfortat the beginning of treatment that responding well to temporary antispasmodic medication.

4. Conclusion

Cholestyramine is a safe, simple adjunctive therapy for rapid normalization of thyroid hormones in patient with resistant hyper thyroidism before surgery.

References

[1] Ginsberg J. Diagnosis and management of Graves' disease. CMAJ 2003; 168(5):575-85.

[2] Ma C, Xie J, Wang H, Li J, Chen S. Radioiodine therapyversus anti thyroid edications for Graves' disease. Cochrane Database Syst Rev 2016; 2: CD010094.

[3] Pearce EN. Diagnosis and management of thyrotoxicosis. BMJ2006; 332(7554):1369-73.

[4] Solomon BL, Wartofsky L, Burman KD. Adjunctive cholestyraminetherapy for thyroto xicosis. ClinEndocrinol (Oxf) 1993; 38(1):39-43.

[5] Mercado M, Mendoza-Zubieta V, Bautista-Osorio R, Espinoza-delos Monteros AL. Treatment of hyperthyroidism with a combination of methimazole and cholestyramine. J Clin Endocrinol Metab 1996; 81 (9):3191-3.

[6] Sebastian-Ochoa A, Quesada-Charneco M, Fernandez-GarciaD, Reyes-Garcia R, Rozas-Moreno P, Escobar-Jimenez F.Dramatic response to cholestyramine in a patient with Graves'disease resistant to conventional therapy. Thyroid 2008; 18(10):1115-7.

[7] M.T. Hays, Thyroid hormone and the gut. Endocr. Res.1988; 14: 203–224

[8] Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol In Adults. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA: The Journal of the American Medical Association 2001; 285:2486–97.doi:10.1001/jama.285.19.2486.

[9] Di Padova C et al. Double-blind placebo-controlled clinical trial of microporous choles tyramine in the treatment of intra- and extra-hepatic cholestasis: relationship between itching and serum bile acids. Methods Find Exp Clin Pharmacol 1984; 6(12):773–776

[10] Faergeman, Ole. "Effects and Side-Effects of Treatment of Hypercholesterolemia with Cholestyramine And Neomycin." Acta Medica Scandinavica, 2009; vol. 194, no. 1-6, pp. 165–167. doi:10.1111/j.0954-6820.1973.tb19425.x.

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