

# Graves' disease in a 3 year-old patient with agranulocytosis due to methimazole

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## Introduction:

Graves' disease is the most common cause of hyperthyroidism in children with autoimmune thyroid disease. Clinically, goiter, tachycardia, restlessness, craniosinostosis, hyperactivity, growth retardation, diarrhea may occur. Graves' disease is rare under 4 years of age. Treatment options include antithyroid therapy, surgery, and radioiodine therapy. The most commonly used antithyroid therapy is methimazole and has serious side effects such as hepatitis, neutropenia and agranulocytosis.

## Case:

The patient was 3 years and 2 months old girl, was referred to the external center for restlessness. She had no additional complaints. She was born term, 2800 gr. In her past medical history, there was no thyroid disease, but she was being followed up by pediatric neurology and genetics because of microcephaly, growth retardation, syndromic appearance. In her physical examination; weight:10,2 kg (-2,81 SD), height:86,8 cm (-2,48 SD), thyroid gland was nonpalpable, puberty was Tanner stage 1, heart rate :125/ min, blood pressure: 100/60 mm/Hg. Laboratory results are; free T3:7,78 pg/ml(2,6-4,37), free T4: 2,79 ng/dl(0,61-1,12), TSH: <0,005 uIU/ml(0,34-5,6), anti Tg : 0, anti TPO: 33,9 IU/ mL, thyrobulin: 42,85 ng/ml. TSH receptor antibody:8,2 U/L (N=0-14), urine iodine:145,4 ug/L(100-200).

In her thyroid gland ultrasound, it was heterogeneous. In thyroid scintigraphy, thyroid gland is in normal location, there is a slight increase in the size of the gland.

She was diagnosed as Graves' disease and 1 mg/kg propranolol and 0.5 mg/kg/day methimazole treatment were started. At 4th month of treatment, she was admitted to emergency clinic with fever complaint. Her physical examination was normal but in blood count, WBC was 1700 uL, absolute neutrophil count was 800 uL. She was evaluated by pediatric hematology. Her viral markers were negative. Methimazole was discontinued because of its side effect. On the 20th day of her follow-up, hemogram returned to normal, she was hyperthyroid again (fT3: 4,7 pg/ml, fT4: 1,46 ng/dl, TSH: 0,051 uIU/ml, thyroglobulin:26 ng/ml, TSH receptor ab: 23,73 U/L) and methimazole treatment was started. In the last follow-up visit, the patient was euthyroid and hemogram were normal.

## Conclusion:

Graves' disease is the most common cause of hyperthyroidism in childhood and it is rarely seen in children under 4 years of age. Antithyroid therapy, which is the first treatment option, has a serious complication such as agranulocytosis. It is usually dose dependent and can be seen within the first 6 months after the treatment and it is most common in the first 3 months. Patients should be closely followed because of the risk of agranulocytosis, if necessary, a different treatment option such as thyroidectomy or radioiodine therapy should be tried.

## References:

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