



Neonatal hypothyroidism following transplacental amiodarone treatment for supraventricular tachyarrhythmia

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The authors have nothing to disclose

The proper function of fetal thyroid gland depends on a proper content of iodine in mother's diet and its transplacental transportation.

Fetal iodine overload may be responsible for fetal hypothyroidism.

Amiodarone is an iodine-rich antiarrhythmic medication drug with a structure resembling that of thyroxine and it contains 37% iodine by weight.

Fetal tachyarrhythmia is associated with significant perinatal morbidity and mortality.

If left untreated it can cause congestive heart failure and non-immune hydrops fetalis.

Transplacental therapy with oral antiarrhythmic drugs administered to the mother is usually effective in non-hydropic fetuses.

Case study:

A 9-day old girl was admitted to the outpatient clinic because of elevated TSH level stated during a routine newborn screening test (capillary TSH 18,29 mU/L from the first and TSH 19,23 mU/L from the second screening test).

She was born at 40th week of gestation from spontaneous labor with Apgar scores of 10, weight 3520 g, length 53 cm from a young, healthy parents.

At the 29th week of gestation it was stated that the fetal heart rate ranged from 230 to 250 beats per minute.

Echocardiogram showed a structurally normal fetal heart, no hydrops fetalis was stated.

Transplacental oral antiarrhythmic therapy to the mother with amiodarone was started with the dose of 600 mg and was continued with the dose 200 mg up to 40th week of gestation.

After birth the baby had sinus rhythm and did not require any treatment.

On presentation

Good general condition, although a bit less active. Heart rate from 110 to 120 beats per minute. Slightly yellowish skin.

Weight 3650 g, length 58 cm.

TSH was 20,1 mU/L, fT4- 10 pmol/L, bilirubin 8,7mg%, ALT 30 U/l, AST 34 U/l.

Ultrasound revealed thyroid gland in typical position with normal echogenicity and volume of 0,7 ml.

Echocardiogram, ecg nad abdomen ultrasound – normal

Treatment

Treatment with L-thyroxine dose of 10 µg/kg per day was introduced.

In the next six months the L- thyroxine therapy was adjusted with decreasing doses according to TSH and fT4 evaluations. At the age of 7 months her thyroid hormone levels were normal (TSH 2,6 mU/L, fT4-15,6 pmol/L) and L- thyroxine therapy was stopped.

Thyroid ultrasound- normal echogenicity and volume of 1 ml.

Follow-up

The follow-up showed clinical and laboratory euthyrosis.

At the age of five she presented a normal growth with the height in the 75th percentile and weight in the 50th percentile. She has not had any recurrence of tachyarrhythmia.

Her mental and intellectual development was normal, and she met all appropriate developmental milestones.

Age	TSH (mU/L)
3rd day (1st screening)	18,29
8th day (2nd screening)	19,23
9th day (presentation)	20,1
1st-6th month (on treatment)	2,2-3,1
7th month (no treatment)	2,6
8th month-5th yrs= (no treatment)	2,1-3,2

CONCLUSIONS

Transplacental amiodarone treatment for supraventricular tachyarrhythmia may result in transient congenital hypothyroidism in newborns.

Adequate treatment and precise monitoring of neurodevelopment in this children provide a possibility of good outcomes.

