VALUE OF ULTRASOUND IN THE DIAGNOSIS OF CONGENITAL GOITER

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Abstract:
Authors present a case of a newborn boy, who had a baby-fist sized mass in the midline of his neck causing respiratory and feeding difficulties. This terime in the region of his neck was diagnosed by Ultrasound as congenital goiter.
Hormone substitution was started on the second day of life, so surgical treatment was avoided and the thyroid gland reduced in size.

Key words: Congenital hypothyroidism, congenital goiter

Nowadays in Hungary we hardly come by endemic goiter and congenital cretinism but sporadic cases may occur. In our case the cause of the extremely big congenital goiter which caused respiratory depression as well, was verified as fetal hypothyroidism. As a result of the early diagnosis and the adequate/appropriate hormone substitution which started on 2-1 day of life, the goiter showed a very good regression and did not need surgical treatment.

Case report:
The two hours old, full-term newborn baby was investigated becauese of a terime in both ventral parts of his neck. (Fig. I .) He had a moderate macrocephaly, the anterior fontanel was 3x3 cm, the heart rate was 120/min, the respiratory frequency was 50/min, his skin was Ital dry, had normal turgor as well as a spontaneous meconium - passage. This lesion caused respiratory and feeding difficulties, in case of this clinical appearance we had to take into consideration anomalies causing obstruction in the upper respiratory system - laryngeal, tracheal, bronchial malformations, mediastinal masses, vascular abnormalities, cervical cysts and enlarged thyroid gland.
At 18` hour of life a cervical Ultrasound examination was performed which showed an extreme large thyroid gland dislocating the cervical vessels, and extending into the substernal region as well. Its structure was homogenous. (Fig. 2.). At this time hormone tests were taken as well, TSH was more than 100 µU/ml, T4 was 39,6 nmol/l, so the cause of the goiter hypothyroidism was verified. Hormone substitution was started immediately with L-Thyroxin in the dosis of 10 µg/kg/day, serum

hormone contrentrations, and the size of the thyroid gland were monitored regularly (Fig. 3.) The inspiratory difficulty ceased and the somatical development started.

Fig. 1: Photography of the newborn baby shows the large terime in the neck.

Fig. 2: Ultrasonography showed the enlarged, inhomogenious thyroid gland.

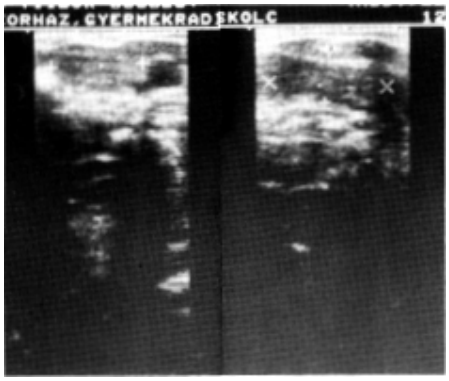

Fig. 3: Three months after normal sized thyroid gland (right and left lobe) was found by ultrasound.

Discussion

The development of the fetal thyroid gland begins in the 3" gestational week. It's able to take up iodine and to synthesize iodothyronines. In the thyroid hormone synthesis the mother, the fetus and the placenta constitute a common unit. Some of the thyroxines can cross the placenta as well as some thyreostatic drugs, antibodies and the iodid itself.

There is considerable evidence for the essential role of the thyroid hormonos in the growth and development of the central nervous system. The maternal hormones crossing the placenta aren't

enough to prevent the nervous system from the consequences of fetal hypothyroidism. Later the signs and symptoms may be neuromotorical-, perceptual-, and language disabilities, difficulties in paying attention [2].

Lack of maternal iodide: in our case it was the most possible reason. It was verified by the decreased maternal iodide levels in the urine, and by the fact that, all her life she has been living in an endemic iodide deficient territory without using iodinated salt.

In our country the insufficient iodine supply is a current problem. Latent maternal iodine deficiency exists and it's consequence, the final outcome of mental development in their children is unknown.

In our case the early diagnosis and therapy was very important because of the suffocating goiter.

Since the Ultrasound and laboratory hormone tests are the gold standards for the diagnosis, scintigraphy could have been avoided, but later we may consider to perform it during the investigation of dyshormongenesis. Later the clinical symptoms, the serum hormone tests and Ultrasound revealed its size and morphology of the thyroid glant- it can be a good prognostical sign by monitoring its likely homogeneity [4]. These are as well as follow - ups to be sufficient for the diagnosis and care.

Authors support the idea that the Ultrasound is indispensable in the diagnosis and care of the thyroid gland's disorders

References:

1. Avery GB et al: Neonatology. J.B. Lippincott Company, Philadelphia 1994. pp783-89.

2. Dattani M, Brook CG: Outcomes of neonatal screening for congenital hypothyroidism. Curr Opin Pediatr. 8:389-95, 1996.

3 Takshima S. et al: Congenital hypothyroidism: assessment with Ultrasound Am J Neuroradiol

4 Nelson: Textbook of Pediatrics Melania, Budapest, pp]414-25, 1995.

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