Dear All

During thyroid lecture 1, I mentioned that T3 and T4 cross the placenta. Some of you questioned this and said these hormones do not cross the placenta and I promised them to recheck this issue.

**While reading about the subject I found out that traditionally it was thought that thyroid hormones do not cross the placenta, but more recent studies suggest that they do.**

The following paragraph is copied from Robbins, 11th edition:

"Normally, maternal hormones that are critical to fetal brain development, including $T_3$ and $T_4$, cross the placenta. If maternal thyroid deficiency is present before the development of the fetal thyroid gland, mental retardation is severe. By contrast, reduction in maternal thyroid hormones later in pregnancy, after the fetal thyroid has developed, allows normal brain development. "

And this paragraph is copied from a 2015 article:
"Abnormalities of the maternal thyroid hormone in pregnancy are associated with neurodevelopmental deficiencies in offspring Additionally, $T_3$ and $T_4$ exert effects in several fetal organs, including limbs, brain and liver, from 6–12 weeks of gestation .TH receptors, TH transporters and deiodinase enzymes are expressed in the fetal cerebral cortex at seven weeks gestation. Hence, maternal THs play an essential role in early gestation Maternal $T_4$ crosses the placenta in the first and third trimester of pregnancy. Clinical studies have shown that decreased TH levels can result in serious adverse effects on intellectual development of fetus .Maternally-derived TH, when transported through the placenta, influences neural progenitor proliferation, migration and differentiation within the developing embryo before the onset of endogenous TH production

Reference: Biological Functions of Thyroid Hormone in Placenta

Cheng-Yi Chen, Chie-Pein Chen, and Kwang-Huei Lin

Int J Mol Sci. 2015 Feb; 16(2): 4161–4179.

Thank you all for always being alert and raising such issues
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