

Fetal thyrotoxicosis a known complication in Graves’ disease: a case report

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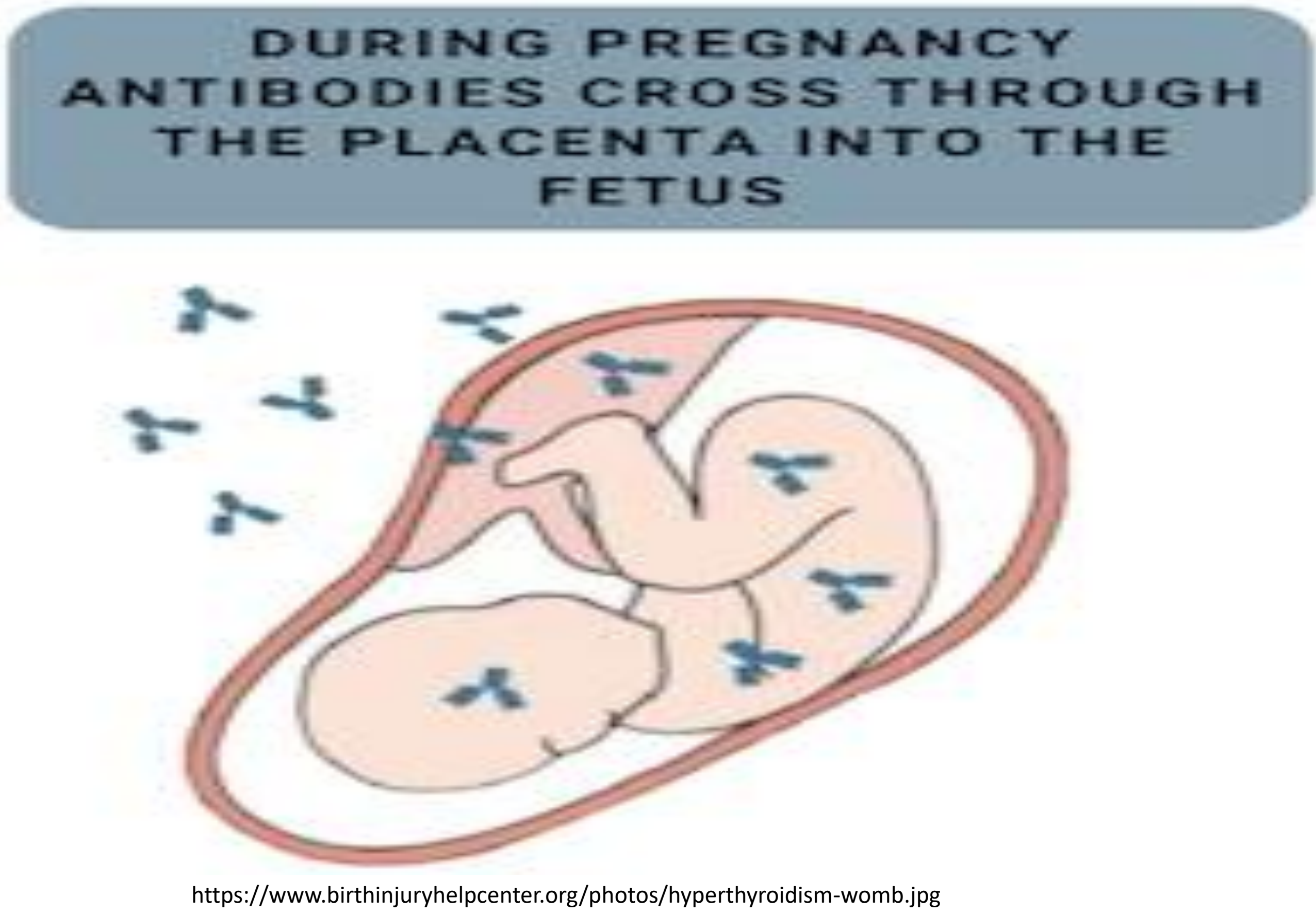
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Background: Graves’ disease is a condition affecting around 2 per 1000 pregnancies¹. The management can be complex and involves the blockade of thyroid hormone synthesis, thyroidectomy or radio-iodine therapy. Complications associated with uncontrolled hyperthyroidism include thyroid storm, congestive cardiac failure, pre-eclampsia, fetal growth restriction (FGR), pre-term birth and stillbirth. In well-controlled Graves’ disease fetal complications are rare, however the presence of high levels of thyroid-stimulating-hormone receptor antibodies (TRAb) can cross the placenta and lead to fetal thyrotoxicosis. Signs of fetal thyrotoxicosis include fetal tachycardia leading to hydrops and intra-uterine death, fetal growth restriction, oligohydramnios and fetal goitre impacting presentation and birth. Left untreated, fetal thyrotoxicosis has a mortality rate of around 15%².



<https://www.drfrante.com/wp-content/uploads/2021/10/Thyroid-Eye-Photo-300x256-1.jpg.webp>

Case: We report the case of 32-year-old Black-African multiparous woman with known Graves’ disease treated with thyroidectomy 8-years prior to this index pregnancy; notably she had a strong family history of Graves. Her booking blood pressure (BP) was 122/72mmHg. Baseline TSH=0.825 and was on thyroxine 175mcg once daily. Both dating and anomaly scans were normal. At 21+5 a fetal tachycardia was noted of 165-180bpm. Maternal TRAb were 134 IU/L. An ultrasound scan confirmed a fetal tachycardia of 176bpm and following endocrine input the patient was started on carbimazole and labetalol. A fetal echocardiogram two-weeks later revealed a fetal heart rate (FHR) 140-160bpm with normal cardiac anatomy and function. TSH levels remained normal. Ultrasound scans throughout the pregnancy revealed normal growth, dopplers and liquor volume, with no evidence of goitre. At 36+3 she attended ADAU in labour and had an uncomplicated spontaneous vaginal delivery. Baby was born in good condition, birthweight was 2.6kg (16th centile). Bloods from the baby revealed TSH<0.5 and fT4=46. Day 6 the baby developed neonatal thyrotoxicosis, FHR 190-200bpm. Bloods repeated revealed fT4=72.3 and TSH <0.005 with TRAb elevated at 12.3 IU/L. The baby was started on a regime of carbimazole, iodine drops and propranolol, and was discharged from the neonatal team day-21. One month later TRAb were undetectable.



Conclusion: Although rare, fetal thyrotoxicosis is a known complication of Graves’ disease which is potentially fatal. It can present in utero with fetal tachycardia, FGR or evidence of a goitre on scan. It results from high levels of TRAb that cross the placenta and is therefore essential to monitor TRAb throughout pregnancy. This is of particular importance in women that present to clinic hypothyroid taking thyroxine following previous surgery (thyroidectomy) or radio-active iodine therapy, as these women have not always been hypothyroid, so a thorough history must be taken. A multi-disciplinary approach to management involving maternal medicine, fetal medicine, the endocrine team, and the neonatal team at birth lead to a good outcome for both mother and baby.

References

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- 2. Nelson-Piercy, C. (2020). *Handbook of obstetric medicine*. (6th edition). CRC press.

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