Maternal Iodine Deficiency and Pregnancy Complications: Still a Health Issue for the Pregnant and Fetuses

Ahmed R.G.

Division of Anatomy and Embryology, Zoology Department, Faculty of Science, Beni-Suef University, Beni-Suef, Egypt

LETTER TO EDITOR

The appropriate maternal thyroxine (T4) and 3,5,3-triiodothyronine (T3) levels during the whole pregnancy are important for the normal fetal development (El-bakry et al., 2010; Ahmed, 2011, 2012a,b, 2013, 2014, 2015a-c, 2016a-d, 2017a-v; Ahmed and Ahmed, 2012; Ahmed et al., 2008; 2010; 2012; 2013a,b, 2014, 2015a,b, 2018a,b; Ahmed and Incerpi, 2013; Van Herck et al., 2013; Ahmed and El-Gareib, 2014, Incerpi et al., 2014; Candelotti et al., 2015; De Vito et al., 2015; El-Ghareeb et al., 2016; Ahmed and El-Gareib, 2017). In particular, the level of T4 elevates by approximately 50% during the first trimester of gestation due to estrogen (E2) augmented the concentration of thyroxine binding globulin (TBG) and increased the peripheral T4 metabolism (Morreale de Escobar et al., 2000; Small ridge et al., 2004; Ahmed et al., 2008; Zimmermann, 2016; Tuccilli et al., 2017). The levels of maternal thyroid hormones (THs) depend on the concentration of iodine (Beaufrère et al., 2000; Pearce, 2014; Jin et al., 2017). The level of iodine sharply increases by 50% during the gestation (Zimmermann, 2016) to increase the production of THs and to cover the fetus needs and the elevation in the iodine excretion (Yarrington and Pearce, 2011). During this stage, fetuses get a fraction of maternal THs and iodine ingredient by the placenta and amniotic fluid.

On the other hand, thyroid disorders, iodine deficiency, and thyroid autoimmunity during the gestation could alter the maternal hemostasis and the fetal development (Chaudhary et al., 2017; Ghanbari and Ghasemi, 2017; Huynh et al., 2017; Lazarus, 2017; Sun et al., 2017; Yu et al., 2017). In addition, Morreale de Escobar et al. (2004) reported that the chronic iodine defects can cause maternal hypothyroidism, and several adverse pregnant disorders. In women, severe maternal iodine deficiency is associated with spontaneous abortion, stillbirth, endemic cretinism, fetal growth restriction (FGR), preterm delivery, low birth weight (LBW), and neurological damage (World Health Organization, 2007; Zimmermann, 2009; Jin et al., 2017). Additionally, Yu et al. (2017) recorded that marginal iodine deficiency can disrupt the interactions between Bergmann glia cells (BGs) and Purkinje cells (PCs), and between the regulation of the glutamate transporter and receptor. Delange (2001) postulated that the gestational inadequate iodine intake can delay the maturation of the developing brain from mild intellectual reduction to frank cretinism, which is the main avoidable reason for mental defects. Nevertheless, the disorders of mild/moderate maternal iodine deficiency on gestation are remaining debated (Mason et al., 2002; Jiskra et al., 2014) on account of its impacts are unstable and mediated (Brucker-Davis et al., 2012).

Collectively, it is also worth mentioning that, together with the previous examinations, the present view suggests that the balance in the activities of THs and in the concentration of iodine during the gestation can keep the regular associations between the dams and their fetuses. In addition, any disorders or deficiency in the concentration of iodine during the gestation may cause multiple pregnancy complications, maternofetal hypothyroidism, and delay the fetal development, in particular, the developing brain. Thus, adjustment the urine iodine concentrations of pregnant women should be followed to avoid any disorders in the maternal iodine and in the fetal development. As well, iodine nutrition or supplementation may be required during the gestation. However, additional
studies are warranted to investigate the effects of all types of thyroid dysfunctions and gestational iodine nutritional surveillance on the fetal/neonatal outcomes.

REFERENCES


Maternal Iodine Deficiency And Pregnancy Complications: Still A Health Issue For The Pregnant And Fetuses


Effects of zinc supplementation on neonatal hypothyroidism and renal disorders. ARC Journal of Animal and Veterinary Sciences 3(2), 1-5.

Maternal Iodine Deficiency And Pregnancy Complications: Still A Health Issue For The Pregnant And Fetuses


Maternal Iodine Deficiency And Pregnancy Complications: Still A Health Issue For The Pregnant And Fetuses


Copyright: © 2018 Authors. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.