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Commentary Open Access

Gestational Prooxidant-Antioxidant Imbalance may be at Higher Risk for Postpartum Thyroid Disease

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Commentary

Thyroid hormones (THs) regulate many features of fetal development [1-29]. Also, the balance between antioxidants/prooxidants is critical for the cellular homeostasis and for the development [30,5-10]. This protection might be facilitated by the maternofetal thyroid states [2,5,6,31,32]. Additionally, the defense mechanisms against free radical-induced oxidative stress involve [2,33] (1) preventative mechanisms; (2) repair mechanisms; (3) physical defences; and (4) antioxidant defenses. Alternatively, it was also stated that reactive oxygen species (ROS) may play critical roles in several developmental and physiological processes, however when being in excess ROS can cause oxidative damage [2,5,6].

Any reduction in the availability of THs might possibly disturb the fetal and neonatal development [1-10,24-26]. These imbalances resulting from the production of free radicals, lipid peroxidation (LPO), carbonylation and nitration, and reduce the enzymatic and non-enzymatic antioxidant defense system [2,5,6,33-35]. More so, a progressive hypothyroidism during the postnatal period led to a decrease in the levels of total thiol (t-SH) [5,6] and glutathione (GSH) [36,37] and in the activities of glutathione peroxidase (GPx), superoxide dismutase (SOD), and catalase (CAT) associated with an increase in the levels of nitric oxide (NO) [5,6], hydrogen peroxide (H2O2) [38] protein carbonyl (PCa), LPO [36,38] and hydroxyl radical (·OH) [2,36]. These disorders caused oxidative stress [5,6,39]. On the other hand, hypothyroidism is associated with cellular ionic imbalance, augmented oxidative stress, and decreased GSH and glutathione-S-transferase (GST) [2,5,6,39-41]. Also, a reduction in the levels of free radical is predictable on account of the metabolic inhibition by the hypothyroid state [42-44]. This disturbance has deleterious effect on the health of the newborns and adulthood [5-10]. Thus, I could infer that the imbalance in pro/antioxidant system might cause some developmental damage related to thyroid disorders. Additional studies are wanted to highlight the role of oxidative stress signs as indicators of thyroid dysfunctions.

Conflict of Interest

The author declares that no competing financial interests exist.

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