

4th International Conference on

Obstetrics and Gynecology

November 14-15, 2019 | Singapore

The importance of blood management in childbearing age women

Lau Ching Wa

Blood Transfusion Services, Hong Kong

Iron is a precious resource for all living organisms. In human, it is vital for fetus and infant neurodevelopment, neuronal functions, cardiac muscle and skeletal muscle functions, hormonal synthesis and bodily detoxification. A tight mechanism exists in regulating its uses for different bodily functions, its absorption and its storage. However, there is virtually no excretion mechanism for iron in human other than minimal insensible loss from intestinal mucosal desquamation or sweat. As a matter of factor, iron is recycled inside the body and absorption only takes place to replenish the insensible loss. The total bodily iron in a child bearing age woman is around 45mg/kg (that is 2500mg to 3500mg), two third of them are embedded in the red blood cells, less than 5mg/kg of iron are embedded in various tissues carrying out numerous vital bodily functions, and the remaining of them are stored in the reticulo-endothelial system, namely liver and spleen. Blood loss including physiological menstrual loss and inadequate oral intake are two major causes of iron deficiency in childbearing age women. Many childbearing age women are long standing iron deficient without being diagnosed and never receive appropriate treatment. It would be detrimental if they are undergoing pregnancy, because a normal uncomplicated pregnancy requires up to 1000mg of iron and it could not be possibly provided by the mother.

Fetal growth requires iron throughout the pregnancy; however, the critical neurodevelopment happens in the third trimester where iron is found to be rapidly accumulated in some areas of the brain, notably hippocampus and the surrounding tissues. This process continues throughout the early infancy up to 2 years of age. Numerous studies supported that maternal iron deficiency is a key cause of the development of childhood learning difficulties, speech and language impairment, autism, attention- deficit hyperactivity disorder and more. More importantly, those abnormal neurodevelopment disorders are not reversible by iron supplement after their diagnosis at childhood. This highlights the imperative of adequate iron stores in all childbearing age women. Nevertheless, iron deficiency anemia in childbearing age women are prevalent all over the world, it could be more than 20% in developed areas and even more in developing areas. WHO responded the situation by setting a clear global target of reducing iron deficiency in childbearing age women by 50% in 2025. Thus, it is time for administrators and clinicians to put effort in achieving the target. In conclusion, appropriate management of iron deficiency does not only benefit the health of the childbearing age women, but also the health of our next generation.

e: laucw4@ha.org.hk

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