

SERUM FERRITIN IN DIAGNOSIS OF IRON DEFICIENCY DURING PREGNANCY

Pages with reference to book, From 171 To 172

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Diagnostic distinction between iron deficiency anaemia and other causes of a falling haemoglobin level is a problem in antenatal care¹. Anaemias occurring during pregnancy are known to increase maternal and perinatal morbidity and mortality² and, therefore, it would be of therapeutic importance to select women who are iron deficient prior to their developing a frank iron deficiency anaemia. However, diagnosis of iron deficiency is difficult, even in non-pregnant women^{3,4}. A large overlap exists in the distribution of haemoglobin concentration between normal individuals and those who are iron deficient. Changes in the blood volume and composition (eg. haemodilution) make the diagnosis of iron deficiency in pregnancy even more difficult than that in non-pregnant state.^{2,3,5,6} The use of non-pregnant standards to define normality or deficiency during pregnancy is often misleading. During pregnancy, the rate of iron metabolism increases in many ways. Enhanced absorption, increased mobilization of storage iron and elevated serum transferrin concentration accelerate iron turn over¹. Red cell mass is considerably increased^{7,8} but because of a greater rise in plasma volume, a certain degree of haemodilution almost always occurs. This results in a fall of haemoglobin concentration and haematocrit values as well as in the red cell count, even though red cell mass actually increases, invalidating the diagnostic value of these conventional laboratory measurements. Serum iron and TIBC or serum transferrin concentrations are used to identify iron deficiency¹⁰. However, serum iron values show much day to day and even hour to hour variation¹¹ and transferrin concentration is always increased during pregnancy¹⁰⁻¹³. The most sensitive way of measuring iron deficiency is the assessment of body iron stores. Measurement of actual iron stores and their changes in pregnancy are of crucial importance when distinguishing between iron deficiency and other causes (eg. haemodilution) of a falling haemoglobin level¹³. The falling concentration of blood haemoglobin cannot be attributed to iron deficiency if there are demonstrable stores of unused iron in the body. Until recently there has not been any simple way of estimating iron stores or quantitating the changes of storage iron during pregnancy.^{13,14} Estimation of the bone marrow stainable iron has been used to evaluate iron stores during pregnancy, but the method is semiquantitative; laborious and also inconvenient to the patient^{12,15,16}. Obviously, there is need for better diagnostic criteria for iron deficiency during pregnancy. Serum ferritin assay adds a new tool for investigating iron metabolism during pregnancy, its concentration accurately reflects the level of body iron stores during pregnancy¹⁶⁻²¹. The procedure is far easier than other methods for estimating iron stores. A low serum ferritin concentration always indicates depleted iron stores, and iron deficiency seems to be the only condition associated with decreased serum ferritin concentration.^{14,16} It is sometimes difficult to distinguish between iron deficiency anaemia and infectious anaemia, since the serum iron and transferrin saturation can be low in both the conditions^{3,4,10,14}, but the fact that serum ferritin concentration is increased with infections adds to its diagnostic value. The changes that occur in serum ferritin concentration during and after normal pregnancy are in accordance with the iron balance calculations for iron needs during pregnancy¹⁷. Serial measurements of serum ferritin concentration during normal pregnancy show that if no exogenous iron is given, all women, irrespective of the initial size of their iron stores have depleted iron stores at the time of delivery^{17,18,21}. Serum ferritin determination is, at present, the best single measurement to detect iron deficiency during pregnancy. If anaemia (low blood Hb.) is

associated with a low serum ferritin concentration during pregnancy, diagnosis of iron deficiency anaemia can almost invariably be made.

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