

Plasma ferritin is used extensively as a quantitative measure of the size of iron stores in both adults and children. An elevation in plasma ferritin is seen however, not only in iron overload, but also in pathological disturbances such as liver disease, inflammation and malignancies.

High plasma ferritin has been found in malnutrition. The aim of this study is to determine whether or not the high ferritin in malnutrition is the result of high iron stores or of some other condition where ferritin escapes into the plasma from damaged tissue.

Twenty six malnourished children admitted to the T.M.R.U. ward were injected intra-muscularly with 500 mg of the iron specific chelating agent, Desferrioxamine, and the urinary iron output over twenty four hours determined (urinary iron in response to Desferrioxamine is a good index of the size of iron stores). This test was performed at admission and at discharge, and the urinary iron related by regression analysis to whole blood haemoglobin, packed cell volume, plasma ferritin, plasma glycosylated ferritin, percent glycosylation of ferritin, plasma iron, transferrin, percent saturation of transferrin and reduced glutathione.

Urinary iron correlated significantly with plasma ferritin, glycosylated ferritin, transferrin, percent saturation of transferrin, plasma iron and reduced glutathione, and was significantly higher in children with oedema than in those without. Plasma ferritin was also significantly higher in children with oedema.

The extent of binding of plasma ferritin to Concanavalin A suggests secretion into the plasma via the normal pathway and not by leakage from damaged tissue.

The data suggests high iron stores and high oxidative stress in malnutrition, the implications of which are discussed.