

ABSTRACT

Serum hepcidin levels in ulcerative colitis - do they correlate with anemia and/or inflammation?

Background to the study

Anemia is a common complication of inflammatory bowel disease (IBD), which comprises Crohn's disease (CD) and ulcerative colitis (UC). Hepcidin is known to be the central regulator of iron homeostasis in the body. It is up-regulated by inflammation and down-regulated by anemia. Previous work has shown that serum hepcidin levels were decreased in patients with ulcerative colitis, who had co-existent anemia. This was surprising as these patients had a chronic inflammatory state.

Aim:

The aim of the present study was to test the hypothesis that when anemia and inflammation, which are opposing factors involved in regulation of hepcidin, co-exist in patients with UC, the effect of anemia on hepcidin predominates over that of inflammation.

Materials and methods:

A total of 59 patients were recruited into the study. Forty patients who were diagnosed to have ulcerative colitis by standard consensus criteria served as cases. Nineteen patients who attended the Gastroenterology clinic for investigation of dyspepsia and who were found to have no detectable abnormalities, who were non-anemic (Hb \geq 12 g/dL for females and \geq 13 g/dL for males) and who had no evidence of inflammation (serum CRP levels $<$ 6 mg/dL)

served as control subjects. Informed consent was obtained for collecting blood from the study participants at the time of recruitment. Levels of serum ferritin, iron, hepcidin, C-reactive protein and hemoglobin were estimated in each sample. Data were analyzed using SPSS version 16, using appropriate tests. A p-value of <0.05 was considered to be statistical significant.

Results:

Levels of hemoglobin and serum iron and hepcidin were significantly lower and that of serum CRP were significantly higher in patients with ulcerative colitis, than in control patients. Levels of hemoglobin, serum ferritin, iron and hepcidin were significantly lower in patients with UC who were anemic than in those who were not. Levels of serum hepcidin correlated positively with hemoglobin, iron and ferritin.

Conclusion:

Serum hepcidin levels were significantly lower in patients with UC than in control subjects; they were also lower in UC patients who were anemic than in UC patients who were not. Serum hepcidin levels correlated significantly with markers of iron status, but not with a marker of inflammation (CRP). Hence, it appears that when anemia and inflammation coexist, the influence of anemia on hepcidin predominated over that of inflammation.

Keywords: Serum hepcidin, ulcerative colitis, anemia, iron