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Metabolic stressors of obesity and colorectal cancer

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Background: Clinical trials continue to support the notion that colorectal cancer (CRC) is a lifestyle-related syndrome in which obesity is a cofactor. Oxidative stress is involved in the pathogenesis of both CRC and obesity and it has been postulated that B vitamins (folate, vitamins B6 and B12) deficiency and hyperhomocysteinemia are the main metabolic stressors of oxidative stress-associated CRC and obesity.

Objective: The current study was attempted to identify metabolic stressors that synergize with obesity in the etiology of CRC.

Subjects & Methods: A cross sectional study included 100 of newly diagnosed male CRC patients and they were all obese based on their body mass index (BMI kg/m^2). The retrospective dietary intake of all study subjects was estimated using a semi-quantitative food frequency questionnaire and fasting blood samples were drawn to assess their serum levels of B-vitamins, homocysteine (HCY) and glutathione.

Results: It was observed that they had a lower dietary intake of B-vitamins as compared to the corresponding recommended dietary allowances. Biochemical analyses revealed depletion of glutathione, low serum levels of B vitamins and an elevation in the serum levels of HCY.

Conclusion: Our results suggest that low intake of B-vitamins is associated with hyperhomocysteinemia that results in oxidative stress in the enrolled study subjects. Measurement of serum HCY and glutathione are recommended to be used as metabolic stressors biomarkers in clinical practice for early diagnosis and screening of CRC.

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