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The Diagnostic and Prognostic Significance of Serum Neutrophil Gelatinase-Associated Lipocalin Levels in Patients with Colorectal Cancer

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Abstract
Aim of the study: Neutrophil gelatinase-associated lipocalin (NGAL) is an inflammatory biomarker that is stored in neutrophil granules. Recent studies revealed that NGAL expression increases in tissue samples of patients with inflammatory gastrointestinal system diseases and cancers. The aim of this study was to evaluate the diagnostic and predictive significance of plasma NGAL levels in various stages of adenoma-carcinoma sequence of colorectal cancer.
Materials and Methods: Eighty cases were included in the study and separated into 3 groups. “Cancer Group” consisted of 27 colorectal cancer patients who underwent curative resection, whereas 24 patients with colorectal adenomatous polyps detected by colonoscopy were classified as the "Polyp Group", and 29 patients with normal colonoscopy findings were classified as the "Control Group". The serum NGAL, CEA and CA19-9 levels and histopathology findings were determined.
Results: The mean plasma NGAL levels for control group, polyp group and cancer group were found to be 91.5 ng/ml, 139.6ng/ml and 184.3ng/ml, respectively. Plasma NGAL levels were found to be significantly higher in cancer group compared to the control group (p:0.006). Plasma NGAL levels were detected statistically significant and positive correlated with tumor diameter and number of metastatic lymph nodes (p:0.047, r:%38.6 and p:0.026, r:%42.8, respectively) in cancer group.
Conclusions: We are of the opinion that pre-operative plasma NGAL level is a potential diagnostic biomarker for colorectal cancer patients. Although more comprehensive studies are needed for definitive judgments, serum NGAL levels may be used as a diagnostic and/or predictive biomarker for lymph node metastasis in patients with colorectal cancer.
Key words: Adenoma-carcinoma sequence, cancer biomarkers, colorectal cancer, Neutrophil gelatinase-associated lipocalin (NGAL), diagnosis