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Serum CEA Levels in Gastrointestinal Diseases

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Preoperative carcinoembryonic antigen (CEA) levels in 36 colorectal carcinoma patients were corrected in accordance with pathological stage and tumor location. Increasing levels of CEA were found in advanced stages of the disease. There were no significant differences among the CEA levels of right-sided colon tumors, left-sided tumors and rectal tumors.

(Key Words: Carcinoembryonic antigen (CEA), Colorectal Carcinoma (classification, location and prognosis))

INTRODUCTION

Serum carcinoembryonic antigen (CEA) levels in patients with gastric carcinoma were reported in our previous paper (1). In this report, the records of CEA levels in 36 colorectal carcinoma patients are evaluated.

SUBJECTS AND METHODS

The records of 36 colorectal carcinoma patients operated on within the past two years were reviewed. Their ages ranged between 16 and 91 years, and 18 of them were men. All of them were diagnosed by barium enema and/or endoscopy. Operative specimens were classified by a modified Dukes' method as follows:

A—Limited to bowel wall (without serosal involvement)
B—Beyond bowel wall (serosa or perirectal fat involved)
C—Abnormal lymph nodes
D—Metastatic disease

A clinical estimate of the extent of the tumor was performed by the operating surgeon during surgery.

The location of the tumor was recorded as being in the right side of the colon (cecum and ascending colon), the transverse colon, the left side of the colon (descending and sigmoid colon) or the rectum. Preoperative serum CEA levels were determined by a standard radioimmunoassay technique.

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RESULTS

Serum CEA levels, location of tumors and pathological stages in patients with colorectal carcinoma are shown in the Fig. 1.

With 2.5 ng/ml as the upper limit of normal in CEA level determination, 39% of all patients with known colorectal carcinoma had nomal values. With 5.0 ng/ml as the upper limit of normal, 53% of the patients had normal CEA values.

Three of the eight patients (38%) in stage B, six of the 12 patients (50%) in stage C and six of the nine patients (67%) in stage D showed CEA levels greater than 10.0 ng.ml. Four of the nine patients with stage D lesions had CEA levels greater than 20.0 ng/ml. All six patients with stage A lesions showed serum CEA levels of less than 5.0 ng/ml.

Left-sided (descending and sigmoid) colon tumor patients were the greatest in number (18 out of 36 patients). Right-sided (cecum and ascending) colon tumor patients and rectal carcinoma patients were similar in number (eight out of 36 patients). Only two out of 36 patients had transverse colon carcinoma. There were no significant differences among the CEA levels in each group of tumor locations.

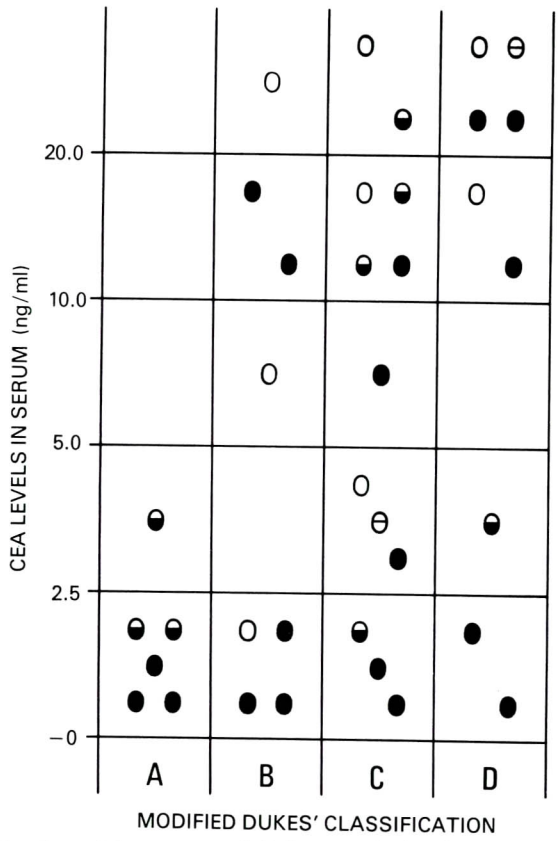

Fig. 1 There was a definite correlation between increasing levels of CEA and increasing stage of desease. However, little difference was seen in the CEA levels among the locations.

Location of carcinoma

0: Right-side colon
θ: Transverse colon
●: Left-sided colon
θ: Rectum

DISCUSSION

The measurement of CEA was originally described by Gold and Freedman in 1965 (2). Today, CEA measurement has become one of the routine examinations in patients with colorectal carcinoma and other malignancies to estimate the tumor extent (staging) or to examine therapeutic effectiveness after surgical treatment and/or chemotherapy.

In our study, it was shown that there is a definite correlation between increasing levels of CEA and the increasing stage of the disease. However, little difference was seen in CEA levels between patients with stage B and stage C lesions although the latter group have a far worse prognosis (3). These results agrees with the concept of Martin et al that higher CEA values are usually associated with more differentiated tumors or distant metastasis rather than nodal metastasis (4).

Four of the nine patients (44%) with stage D lesions showed CEA levels of more than 20.0 ng/ml although three patients had CEA levels of less than 5.0 ng/ml. These results reconfirm the fact that this test is limited as a screening test (5).

Several reports showed that CEA levels in right-sided colon lesions were lower than those in left-sided lesions (6) (7) although in out study, there were no significant differences between the CEA levels in right-sided tumors and in left-sided lesions.

Preoperative CEA levels showed good correlation with the stage, but they could not definitely discriminate between stage B and stage C which have a different prognosis. Therefore, another method to distinguish between stage B and stage C should be developed in addition to the measurement of CEA levels.

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