Carcinoembryonic antigen (CEA) is an important tumor marker in the management of colorectal cancer. In general, serum CEA measurements are routinely used both pre- and post-operatively. An increase in the level of serum CEA in the post-operative follow-up strongly suggests recurrences. Preoperative CEA measurement is also important. A preoperative high CEA value suggests an advanced disease either locally or with a distant metastasis (1).

In curatively resected cases, the preoperative serum CEA level can be a useful predicting factor regarding the outcome of the surgical operation (2). In a recent report by Wiratkapun et al., the cumulative disease-free survival of patients with preoperative serum CEA within normal levels was significantly better than that of those whose serum CEA level was 5 ng/ml or more (3). Furthermore, the authors stated that a CEA level of more than 15 ng/ml was found to be an adverse prognostic indicator irrespective of Dukes staging. However, in general, the periodic measurements of serum CEA level in the post-operative follow-up period is considered to be more important for the purpose of detecting recurrences, either local or distant. Wichmann et al. reported that approximately half of patients with recurrences of colorectal cancer could benefit from routine follow-up CEA determination, because in these patients the rise in serum CEA level occurred simultaneously with or preceding the clinical evidence of recurrences (4).

It is generally considered that the increase in serum CEA level tends to be more rapid in blood-borne metastases than in local recurrences. The serial change assessment of serum CEA is considered useful in the characterization of tumor recurrences of colorectal cancer (5). The CEA doubling time (CEA-DT) is a simple and useful method in the assessment of the speed of tumor growth. CEA-DT is not only an indicator of tumor growth, but also a predictive factor after the resection of metastasis. Koga et al. reported that CEA-DT of patients who underwent resection of liver metastasis correlated well with the survival rate (6). In their report, the survival time of patients with a CEA-DT of less than 30 days was significantly shorter than that of patients with a CEA-DT of 30 days or longer. In a study of the outcome after surgery of locally recurrent rectal cancer, Maetani et al. reported that the CEA-DT both before and after the resection of local recurrences were significant prognostic factors regarding the survival after surgery (7).

Thus, serum CEA level and CEA-DT have been considered to be useful indicators in the management of colorectal carcinoma. The paper by Ito et al. in this issue of JJCO reports a new aspect of the use of serum CEA level (8). The authors analyzed CEA-DT before the operation for colorectal cancer and also determined CEA half-life after surgery. Both are new ways of analyzing serum CEA levels in relation to the post-operative outcome of colorectal cancer patients. Ito et al. measured the serum CEA level twice before surgery with an interval of 1–2 weeks. The results of this study indicated that the CEA-DT before surgery showed a significant correlation with the survival length after surgery, shorter CEA-DT cases showing poor survival. The 11 patients in this study were randomly selected from among those who showed a clear increase in serum CEA level before surgery. Ten patients among the 11 developed recurrences, mostly liver metastasis. The data suggest that the increase in serum CEA level itself can be an indicator for the occurrence of distant metastasis after surgery. The authors stated that they could not confirm the significant correlation between preoperative CEA-DT and prognosis, because of the possible influence of postoperative adjuvant chemotherapy and re-resection after development of relapse or metastases. Although selection bias is a problem in this analysis, CEA-DT before operation might be an interesting indicator for the prognosis after operation.

In the latter half of the paper, the authors analyzed the ‘half-life’ of the serum CEA level after curative surgery for colorectal cancer. This analysis is an entirely new study; the concept of ‘half-life’ of CEA itself is new. The authors analyzed the half-life of serum CEA in 14 patients who underwent curative resection of primary colorectal cancer. The half-life of CEA after surgery in nine recurrent patients was significantly longer than that in five non-recurrent patients (8.01 ± 2.07 vs 4.33 ± 1.11 days). Mostly, the recurrences developed either in the liver or in the lung. The results are considered to give a new indicator for the prognosis of colorectal cancer patients after surgery. In most of the 14 patients, the serum CEA level after operation decreased to a normal level. The results suggest that the micro-metastasis that existed at the time of surgery did not produce CEA sufficient to raise the serum CEA level higher than normal. Accordingly, it is not entirely clear why the CEA half-life was longer in the cases that subsequently developed recurrences. Although this question remains to be answered, the concept of CEA half-life gives us a new concept in analyzing serum CEA levels and might become one of the important
prognostic factors during the follow-up of colorectal cancer patients after surgery.

References


