

Preoperative Natural Killer Cell Activity as a Prognostic Factor for Distant Metastasis following Surgery for Colon Cancer

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Key Words

Colon cancer · Natural killer cell activity · Distant metastasis · Local recurrence · Antitumor immunity

Abstract

Background/Aims: To determine whether preoperative natural killer (NK) cell activity has any prognostic significance in colon cancer patients. **Methods:** The study population consisted of 140 patients with colon cancer. NK cell activity was determined within 2 weeks before surgery in 128 patients and at the time of diagnosis in the remaining 12 patients who either did not undergo surgery or who underwent palliative surgery only. Disease progression and postoperative prognosis were examined in relation to NK cell activity. **Results:** Decreases in NK cell activity did not necessarily correspond to tumor stage. In curatively operated stage I–III diseases, preoperative NK cell activity of 20% or less correlated with poor survival. Lower activity was also associated with metachronous distant metastases but not with local recurrences. In particular, more than half the stage III patients with attenuated NK cell activity developed metastases. Multivariate analysis indicated that attenuated NK cell activity was a significant parameter for predicting distant metastasis following curative surgery for colon cancer. **Conclusion:** Preoperative NK cell activity has a

significant prognostic value in curatively operated colon cancer, particularly for the development of metachronous distant metastasis in stage III patients.

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Introduction

During the clinical treatment of colon cancer, we sometimes encounter patients who develop acute and massive recurrence following curative surgery. Generally, the primary tumor of such cases is highly advanced. In addition, the general health of these patients is often compromised with severe postoperative complications, preoperative organic dysfunction or severe metabolic disorders. We began to suspect that the patient's own anticancer immunity, as well as the potent malignancy of the tumor, may play a role in the development of recurrence following curative surgery. Our preliminary data showed that among several immunological parameters examined before and during a 1-year postoperative period, preoperative natural killer (NK) cell activity was the only one associated with the manifestation of metachronous distant metastasis following curative surgery for colorectal cancer [1]. Consequently, we measured NK cell activity in 140 colon cancer patients to clarify the association between NK cell activity and tumor stage. We also ad-

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