

ORIGINAL ARTICLE

The CD34-microvascular density in colorectal cancer patients

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Summary

Purpose: To investigate the influence of the angiogenesis parameter CD34 microvascular density (MVD) on overall survival of colorectal cancer (CRC) patients.

Methods: Thirty-one CRC patients were followed-up for 72 months after curative colorectal operation. Blood vessels measurement was done using the CD34-MVD immunohistochemistry method, and light microscopy.

Results: MVD was inversely correlated with patients' survival. MVD value < 35 proved as independent good prognostic factor, and patients with this value lived during the 72-month follow up after surgery, while a MVD value > 65 was an independent poor prognostic factor and such patients died within 11 months after radical surgery for CRC ($p < 0.01$).

Conclusion: According to these results, the CD34-MVD seems to be a significant prognosticator of overall survival in CRC patients.

Key words: angiogenesis, CD34, colorectal cancer, microvascular density, survival

Introduction

Despite recent progress in our knowledge about the development and therapy of CRC, this disease still remains one of the major causes of cancer-related deaths around the world. The prognosis of patients with CRC is affected by various factors at the time of diagnosis, including stage, location of the tumor, gender, age and performance status. It is known that common prognostic factors do not fully predict individual clinical outcomes, especially among patients with TNM stage II and III disease [1]. Therefore, in order to improve clinical care and give an optimal treatment, efforts are being made to identify and study new biological prognostic factors.

Angiogenesis plays an important role in tumor genesis, progression and metastasis. MVD has become the morphological gold standard to assess angiogenesis in human tumors [2]. In the past, there have been various studies on the relationship between vascular density

and some tumor parameters such as tumor size, bulky tumor mass, patient survival and metastasis, particularly in tumors of the breast and prostate, melanoma, and large-cell lung carcinoma. In most cases, a direct correlation between MVD and metastasis, and an inverse relationship between MVD and patient survival has been reported [3].

CD34 is a surface glycoprophosphoprotein expressed on the early lymphohematopoietic stem cells, as well as in cells during early hematopoiesis and on the endothelial cells of small vessels and embryonic fibroblasts [4]. Today, it is widely used for hematopoietic stem cell purification and as a marker of most vascular endothelial cells, including those of capillaries in the majority of normal and neoplastic tissues.

Having in mind the clinical importance of neo-vascularization in cancer development and metastasis, we investigated the relationship between MVD, as determined by the CD34 marker, and overall survival in CRC patients.

