

Counting of angiogenesis in colorectal carcinomas using double immunostain

Simona Gurzu¹, Anca Maria Cimpean², Judit Kovacs³, and Ioan Jung¹

¹Department of Pathology, University of Medicine and Pharmacy of Targu Mures; ²Department of Histology, University of Medicine and Pharmacy of Timisoara; ³Department of Intensive Care, University of Medicine and Pharmacy of Targu Mures, Romania

ABSTRACT

The aim of the study was to compare the simple immunostains performed with CD31, CD34 and CD105 antibodies, with double-labeling immunostains realized with CD105 (endoglin) and smooth muscle actin antibodies in colorectal carcinomas. Fourty colorectal carcinoma surgical specimens were immunohistochemically studied. Quantification of microvessel density was realized at 400× magnification, in the intratumoral and peritumoral areas and distant from the tumor. With simple immunostains, it was very difficult to identify the type of vessel. With CD105/smooth muscle actin double-labeling stain we determined vessels maturation grade and identified the following types of vessels: isolated endothelial cells, immature, intermediary, mature and activated mature vessels. The density of intermediate vessels was higher in well-differentiated (2 ± 0.03) than in moderately (0.14 ± 0.02) or poorly differentiated colorectal carcinoma (0.07 ± 0.01). Such vessel types could not be identified with simple immunostains, and we believe that this is one reason why double-labeling immunostaining with CD105/smooth muscle actin should be used to study angiogenesis in colorectal carcinoma. We conclude that the density of intermediate vessels, correlated with the histological grade, could indicate the success or failure of the antiangiogenic treatment. Double-labeling immunostaining is indispensable to study vessel maturation grade.

Key words: angiogenesis, CD105, CD31, colorectal carcinoma, double and simple immunostains, smooth muscle actin.

Acknowledgements: The study was partially supported by the Romanian National University Research Council (CNCSIS), Ministry of Education and Research, projects frame: PN II - PD, no. 504/2010, and by the Sectoral Operational Programme Human Resources Development, financed by the European Social Fund and by the Romanian Government under contract number POSDRU/89/1.5/S/60782.

Correspondence to: Judith Kovacs, MD, PhD, lecturer, Department of Intensive Care, University of Medicine and Pharmacy of Targu Mures, 38 Gheorghe Marinescu Street, Tg Mures, Romania.
Tel +40-74-5673550;
email simonagurzu@yahoo.com

Received December 13, 2011;
accepted February 14, 2012.