Vascular endothelial growth factor as an angiogenic swich in ovarian carcinoma

Dear Editor,

We read with interest the paper published by Ravikumar and Crista in which they studied vascular endothelial growth factor (VEGF) expression in ovarian serous carcinomas and its effect on tumor proliferation.[1]

New blood vessel formation (angiogenesis) is a fundamental event in the process of tumor growth and metastatic dissemination. The VEGF pathway is well-established as one of the key regulators of this process. Due to its central role in tumor angiogenesis, the VEGF/VEGF-receptor pathway has become a major focus of research and antiangiogenic drug development in oncology.[2] Increased VEGF production has been shown to be important in the growth of various solid tumors in humans including osteosarcoma, gastric, esophageal, colorectal, renal, lung and breast carcinomas.[3-5]

Positive VEGF expression in surviving tumor cells post-neoadjuvant-chemotherapy in resected tumors was found to be an important negative prognostic factor in a study that prospectively assessed 31 osteosarcoma patients from India.[6] Further, it was also found that this VEGF expression could be picked up by dynamic contrast enhanced *magnetic resonance imaging* (DCE-MRI) reliably in the same group of patients, which proposed DCE-MRI as a non-invasive imaging surrogate of tumor angiogenesis.[7]

There are conflicting reports with respect to VEGF correlation with tumor mitogenesis.[8-10] Although in this study 80% of tumors expressed higher VEGF, their association with tumor proliferation (although higher in positive cases) could not reach statistical significance. The authors suggested that possible reasons may include variable VEGF type 2 (proliferation maker) expression, different techniques to detect VEGF at m-ribonucleic acid or at the protein level with variable results. Further, VEGF might act indirectly on tumor cells to have pleiotropic effect on growth.[1]

It is still intriguing as it may be merely due to a small sample artifact and it should be re-explored in large, prospective trials to redefine the proliferative potential of VEGF.

The growing appreciation of the biologic diversity of each cancer is forcing treatment into patterns that reflect the underlying biologic features of the neoplasm and it challenges us to redefine the principles of therapy in individual cases.

The current study is a step toward applying this technique not only in ovarian cancer in larger cohorts, but in other malignancies as well. In the era of targeted therapies, identifying pathways that drive tumor growth will be essential for developing successful approaches.

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References

1. Ravikumar G, Crista JA. VEGF in serous ovarion carcinomas and its effect on tumor proliferation. South Asian J Cancer 2013;2:87-90.
2. Hicklin DJ, Ellis LM. Role of the vascular endothelial growth factor pathway in tumor growth and angiogenesis. J Clin Oncol 2005;23:1011-27.
3. Handa A, Tokunaga T, Tsuchida T, Lee YH, Kijima H, Yamazaki H, *et al*. Neuropilin-2 expression affects the increased vascularization and is a prognostic factor in osteosarcoma. Int J Oncol 2000;17:291-5.
4. Kaya M, Wada T, Akatsuka T, Kawaguchi S, Nagoya S, Shindoh M, *et al*. Vascular endothelial growth factor expression in untreated osteosarcoma is predictive of pulmonary metastasis and poor prognosis. Clin Cancer Res 2000;6:572-7.
5. Voest EE, D'Amore PA. Tumor Angiogenesis and Microcirculation. New York, NY: Marcel Dekker; 2001.
6. Bajpai J, Sharma M, Sreenivas V, Kumar R, Gamnagatti S, Khan SA, *et al*. VEGF expression as a prognostic marker in osteosarcoma. Pediatr Blood Cancer 2009;53:1035-9.
7. Bajpai J, Gamanagatti S, Sharma MC, Kumar R, Vishnubhatla S, Khan SA, *et al*. Noninvasive imaging surrogate of angiogenesis in osteosarcoma. Pediatr Blood Cancer 2010;54:526-31.
8. Fan F, Wey JS, McCarty MF, Belcheva A, Liu W, Bauer TW, *et al*. Expression and function of vascular endothelial growth factor receptor-1 on human colorectal cancer cells. Oncogene 2005;24:2647-53.
9. Brustmann H, Naudé S. Vascular endothelial growth factor expression in serous ovarian carcinoma: Relationship with high mitotic activity and high FIGO stage. Gynecol Oncol 2002;84:47-52.
10. Djordjević G, Matusan-Ilijas K, Sinozić E, Damante G, Fabbro D, Grahovac B, *et al*. Relationship between vascular endothelial growth factor and nuclear factor-kappaB in renal cell tumors. Croat Med J 2008;49:608-17.

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