Angiogenesis of endometrial carcinomas assessed by measurement of intratumoral blood flow, microvessel density, and vascular endothelial growth factor levels.

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摘要

Abstract

Objective: To evaluate the relationship between blood now in the tumor assessed by color Doppler ultrasound, microvessel density, and vascular endothelial growth factor levels in endometrial carcinoma. Methods: Forty- nine patients undergoing surgery for endometrial carcinoma were enrolled. Transvaginal color Doppler ultrasound was performed preoperatively and the lowest resistance index (RI) in the tumor was recorded for analysis. Vascular endothelial growth factor in the tumor was quantified by enzyme immunoassay. The microvessel density of the excised tumor was assessed immunohistochemically. The relationships between the corresponding RI, microvessel density, and vascular endothelial growth factor level of the tumor tissues and clinical and pathologic parameters were analyzed. Results: Significantly lower RIs were noted in tumors of stage II or greater (0.37 compared with 0.50, P <.001), of high histologic grade (grade 3) (0.34 compared with 0.49, P =.004), with deep myometrial invasion (one-half depth or greater) (0.39 compared with 0.49, P =.002), with lymphovascular emboli (0.38 compared with 0.49, P <.001), or with lymph node metatasis (0.30 compared with 0.49, P <.001) compared with stage I tumors and tumors of histologic grade 1 or 2, with superficial myometrial invasion, without lymphovascular emboli, or with no lymph node metastasis. Increased vascular endothelial growth factor levels and microvessel density (x200 field) also were detected in tumors of stage II or greater (975 compared with 129 pg/mg, P =.014; and 88 compared with 61, P =.018, respectively), with lymphovascular emboli (1138 compared with 120 pg/mg, P =.002 ; and 86 compared with 63, P =.023), or with lymph node metastasis (1011 compared with 95 pg/mg, P <.001; and 98 compared with 61 , P =.019). Resistance index,

microvessel density, and vascular endothelial growth factor levels in the tumor showed linear correlations (RI compared with microvessel density: r = -.32, P =.03; RI compared with vascular endothelial growth factor levels: I = -.40, P =.004 ; microvessel density compared with vascular endothelial growth factor levels; r =.36, P =.011). Conclusion: Blood flow assessed by color Doppler ultrasound has histologic and biologic correlations with angiogenesis and vascular endothelial growth factor levels and might play an important role in predicting tumor progression and metastasis in endometrial carcinoma. (Obstet Gynecol 2000;96:615-21. (C) 2000 by The American College of Obstetricians and Gynecologists.).