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Prostate-Specific Membrane Antigen is Undetectable in Uveal Melanoma

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Purpose: Uveal melanoma (UM) is the most common primary intraocular malignancy in adults. Despite the high accuracy of clinical diagnosis and advances in the local treatment, more than 40% of UM patients will develop metastases that ultimately lead to death. The majority of metastatic UM cases tend to spread hematogenously to the liver and are usually detected several years after the diagnosis and treatment of the primary tumor. Therefore, the search for new treatment strategies, especially those focusing on hematogenous metastatic spread, is necessary. Prostate-specific membrane antigen (PSMA) is a membrane glycoprotein that is expressed in all types of primary prostatic tissue, in some non-prostatic tissues, and in the endothelium of tumor-associated neovasculature of non-prostatic neoplasms. The expression of PSMA could be a potential target to prevent hematogenous metastatic diseases in UM. To our knowledge, the expression of PSMA in the neovasculature of UM has not yet been studied. The purpose of this study was to examine PSMA expression in endothelial cells of the tumor-associated neovasculature (including vascular loops) in UM. **Methods**: Using the biotin-streptavidin method, fifty-five UM specimens were subjected to immunohistochemical analysis with the anti-PSMA monoclonal antibody. Samples were classified into two categories: negative (if none of the endothelial cells displayed immunostaining) and positive (if any endothelial cell displayed distinctive immunostaining, irrespective of the staining intensity). **Results:** The endothelial cells of the tumor-associated neovasculature (including vascular loops) in all of the 55 UM cases demonstrated negative staining to PSMA. Prostatic secretory-acinar epithelium of a hyperplastic prostate specimen, used as positive control, stained positive to PSMA. This confirmed that the immunohistochemical technique was correctly performed. **Conclusions:** Since the endothelial cells of the tumor-associated neovasculature and the vascular loops in 55 cases of UM do not express PSMA, this protein does not represent a new target for antineovasculature-based therapy. The present study supports the theory that the vascular loops are likely channels developed by highly aggressive and genetically deregulated melanoma cells. However, the possibility that vascular loops may have endothelial cells that are PSMA negative has to be considered and warrants further study.