



Increased Expression of Lectin-Like Oxidized LDL Receptor-1 (LOX-1) - a Potential Biomarker for Tumor Angiogenesis and Metastasis

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Background:

Lectin-like oxidized low-density lipoprotein receptor-1 (LOX-1) is a member of the scavenger receptor family, which mediates the recognition and internalization of oxidized LDL (ox-LDL). LOX-1 is mainly expressed in endothelial cells, although this receptor can also be found in many other cell types such as monocytes, cardiomyocytes, adipocytes, platelets, macrophages and vascular smooth muscle cells. Increased expression of LOX-1 has been implicated in the development of atherosclerosis, diabetic vascular disease and more recently, tumorigenesis. Ox-LDL activates LOX-1 in human endothelial cells thereby inducing the expression of adhesion molecules, downstream inflammatory signaling pathways and mediators of angiogenesis, such as metalloproteinase-2 and 9 (MMP-2 and MMP-9), angiotensin II (Ang II) and vascular endothelial growth factor (VEGF).

Angiogenesis is involved in many physiological processes, but also is a hallmark in the pathology of many diseases (cancer, ischemia, atherosclerosis, inflammatory diseases), in wound healing and in tissue regeneration. Tumor angiogenesis is regulated by the balance between pro- and anti-angiogenic molecules released by tumor cells and tumor stromal cells such as fibroblasts and macrophages, which determine the induction of tumor angiogenesis.

Hypothesis:

We hypothesize that LOX-1 may be an important autocrine or paracrine mediator in angiogenesis, influencing proliferation and metastasis of solid tumors as well as malignant vascular tumors.

Design:

Sections were stained with hematoxylin and eosin (HE) to assess tissue cellular morphology or were used for LOX-1 immunohistochemistry. In vivo expression of LOX-1 was further studied in a variety of human vascular tumors, including benign hemangiomas and hemangioendotheliomas and malignant Kaposi sarcoma (total 50 cases) by immunohistochemistry.

Results:

Enhanced expression of LOX-1 was detected in endothelial derived Kaposi's sarcoma cells (**Figure**) compared with benign vascular tumors.

Conclusion:

This study is the first to demonstrate enhanced LOX-1 expression in metastatic tumor-associated vascular endothelial cells and malignant vascular tumors; therefore expression of LOX-1 may be an important mediator of tumor associated angiogenesis which is involved in tumor progression and metastasis.

