

Abstract

Neoangiogenesis associated with tumours is formation of new blood vessels from pre-existing quiescent vessels in surrounding tumour tissue and it results from pathological employment of normal angiogenesis. Neoangiogenesis became a promising target for cancer treatment in spite of its complexity and many pro-angiogenic and anti-angiogenic factors involved in this process. Anti-angiogenic strategies are based on neutralization of angiogenic ligands, their receptors or inhibition of signalling pathways employed by such receptors. Other potential strategies include upregulation or delivery of endogenous inhibitors, inhibition of endothelial cell proliferation, stabilization of basement membrane and direct disruption of tumour vasculature. Many anti-angiogenic agents have been identified in past several decades but only a few of them were approved for clinical use. Anti-VEGF-A monoclonal antibody bevacizumab (Avastin[®]), soluble decoy VEGF receptor aflibercept (Zaltrap[®]), monoclonal antibody directed against VEGFR-2 ramucirumab (Cyramza[®]) and tyrosin kinase VEGFR inhibitors sunitinib (Sutent[®]) and sorafenib (Nexavar[®]) belong among approved agents.

Key words: angiogenesis, neoangiogenesis, anti-angiogenic therapy, HIF-1, VEGF, bevacizumab