Angiogenic factor

Any of a group of substances present in the circulation (most of which are polypeptides—e.g., angiogenin, fibroblast growth factor, transforming growth factors and some lipids) which play a role in blood vessel formation. Angiogenic factors are increased after myocardial ischaemia.

Biological signals known as angiogenic growth factors activate receptors on endothelial cells present in pre-existing blood vessels. Second, the activated endothelial cells begin to release enzymes called proteases that degrade the basement membrane to allow endothelial cells to escape from the original (parent) vessel walls. The endothelial cells then proliferate into the surrounding matrix and form solid sprouts connecting neighboring vessels. As sprouts extend toward the source of the angiogenic stimulus, endothelial cells migrate in tandem, using adhesion molecules called integrins. These sprouts then form loops to become a full-fledged vessel lumen as cells migrate to the site of angiogenesis. Sprouting occurs at a rate of several millimeters per day, and enables new vessels to grow across gaps in the vasculature. It is markedly different from splitting angiogenesis because it forms entirely new vessels as opposed to splitting existing vessels.

Increased levels of angiogenic factors and tumor vessels in astrocytoma lead to severe peritumoral edema, while vascular normalization substantially alleviates brain edema in patients with glioblastoma [1) 2)].

Aberrant expression of angiogenic factors has been anecdotally documented in brain arteriovenous malformation (AVM) nidus vessels.

Cerebral arteriovenous malformation radiosurgery for patients significantly reduced the plasma levels of angiogenic factors. The plasma angiogenic factors may be candidate markers for aberrant angiogenesis of brain AVM and patient response to radiosurgery. [3)].

1)
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2)
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3)
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