

Vasculature-targeted nano-technology: a novel anti-tumour therapeutic strategy

Mirco Ponzoni,

Experimental Therapy Unit, Laboratory of Oncology, Inst. G.Gaslini

ABSTRACT

Tumour vascular targeting therapy exploits known differences between normal and tumour blood vessels and is based on the use of vascular-disrupting agents (VDAs). A promising new strategy to increase the selective toxicity of anti-neoplastic drugs is to encapsulate them in nano-scale lipidic vesicles. Encapsulation in nano-particles results in favourable changes in the pharmacokinetic properties of the drugs and increased localization of the drugs to regions of increased vascular permeability, e.g., tumours undergoing angiogenesis. Because physicochemical features of lipid nanoparticles can be manipulated with relative ease, liposomes specific for tumour blood vessels can improve the effects of VDAs.

The availability of novel ligands binding to additional tumour vasculature-associated antigens will allow the design of sophisticated combinations of ligand-targeted nanopartical anticancer drugs.