

Tumor biology: focus on tumor angiogenesis

Sérgio Dias

Instituto Português de Oncologia de Francisco Gentil, Centro de Lisboa, EPE.

Abstract

Cancer, which is a broad meaning for dozens of disease entities, represents an important medical and social problem. Our growing understanding of the molecular and basis for cancer onset and progression, has created overwhelming enthusiasm and expectancy from the general population, that eagerly waits for better treatments and "cures". Yet, what is increasingly clearer is that the models that hope to explain the development and progression of cancer have thus far been less than disappointing. A set of phenotypic and genotypic properties characterize cancers. These include independence from growth factors ("Self sufficiency"), capacity to resist pro-apoptotic stimuli, capacity to induce blood vessels to grow (angiogenesis), among others. These properties have revealed key molecular players, that have latter turned into attractive (and in some cases effective) molecular targets. Angiogenesis is a good example of an area of basic research that is now providing some novel therapeutic options; anti-angiogenesis approaches are considered an important clinical option in refractory tumors, and some important results have been obtained in the treatment of colo-rectal, breast and haematological tumors. In the case of the latter, research done in our lab has shown that angiogenesis pathways are active in a subset of haematological malignancies, both in the bone marrow microenvironment and in the tumor cells. In my lecture, I will highlight the most significant advances in cancer research from the bench to the bed-side, and will also highlight some of our most significant advances in angiogenesis research in haematological tumors.