“Malignant cancer versus non-malignant trophoblast”: The similarities between trophoblast and tumour invasion

S. D. SIVASUBRAMANIAM
School of Science and Technology, Nottingham Trent University, Clifton Lane, Nottingham NG11 8NS, UK
Email: shiva.sivasubramaniam@ntu.ac.uk

Abstract: Cancer is one of the major health problem which leads to a large number of deaths worldwide. Due to the heterogeneity of tumour cells, most therapeutic approaches are not fully effective. Interestingly, the nature of tumour invasion is remarkably similar to the invasion by the trophoblastic cells. Although the placenta is a normal tissue, its constituent cells, the trophoblastic cells, share several common features with malignant cells. The cells involved in both processes need to differentiate, proliferate, migrate, and invade through normal tissue using immune tolerance mechanisms. There are many key molecules associated with development of tumour and placenta. These include proto-oncogenes, growth factors (and their receptors), enzymes, hormones.

The obvious difference is that placentation is a unique and regulated process, whereas tumorigenesis is the result of un-regulated growth. The main difference between trophoblast and tumour invasion is that during trophoblast development, the molecular mechanisms such as proliferation, invasion and migration are well regulated. Specifically, invasion declines rapidly after 20 weeks of trophoblast establishing the materno-foetal communication. On the other hand, the tumour invasion happens randomly without any control in the cells transferring to distant organs. This session will review the evidences for using trophoblast cells as a model to understand the molecules/factors that regulate the controlled placental invasion. It will also highlight the recent advances in identifying novel targets such as cancer/testis (C/T) antigens that are common in these two process.

Keywords: Cancer Testis antigens; Tumour, Trophoblast, Invasion

References:

