Breast Cancer Cells and Macrophages in a Paracrine-Juxtacrine Loop

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**Background**

Macrophages have been shown to promote invasion and change multicellular organization of cancer cells. Breast cancer cells (BCC) and macrophages (MC) are known to interact via epidermal growth factor (EGF) produced by macrophages and colony stimulating factor-1 (CSF-1) produced by BCC.

**Knowledge gap**

Despite contradictory findings, this interaction is perceived as a paracrine loop. Yet, an in-depth understanding of the mechanistic basis of this interaction is lacking: It is not known whether the interactions between breast cancer cells and macrophages are based on chemotaxis or haptotaxis or direct contact.

**Results**

BCC cells did not show chemotaxis towards macrophages whereas macrophages showed chemotaxis towards BCC.

MC and MCM did not support initial cell attachment as well as matrigel. MC but not MCM modulated adhesion of BCC in an EGF-dependent manner.

Adherent BCC endocytosed EGFR when in contact with macrophages.

Macrophages reduced and promoted migration of BCC in matrigel and collagen, respectively.

**Conclusions**

Collectively, our data revealed that macrophages showed chemotaxis towards BCC-derived-CSF-1 whereas BCC required direct contact to interact with macrophage-derived-EGF. We propose that the interaction between cancer cells and macrophages is a paracrine-juxtacrine loop of CSF-1 and EGF, respectively.

**References and acknowledgements**

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