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Extracellular matrix components affect cell migration and invasive potential of cultured human pancreatic ductal adenocarcinoma cells

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The tumor microenvironment influences cancer cell behavior in relation to tumor progression, as well as cell proliferation and invasion. Pancreatic ductal adenocarcinoma (PDAC) is characterized by an intense desmoplastic reaction and extracellular matrix (ECM) components in the tumor microenvironment are involved in a crosstalk between tumor cells, stromal fibroblasts and ECM components, influencing tumor cell behavior.

We aimed at analyzing *in vitro* the effect of the crosstalk between PDAC cells and the ECM of the microenvironment by culturing PDAC cells on different ECM proteins used as a substrate, in order to better understand the relationship between cancer cell phenotype and the proteins occurring in the desmoplastic tissue. For this purpose, we analyzed some epithelial-to-mesenchymal transition (EMT) markers and the migration and invasive potential in human HPAF-II, HPAC and PL45 PDAC cells cultured on collagen type I (COL), laminin (LAM) and fibronectin (FN).

Interestingly, the expression of E-cadherin was not significantly affected, but some differences were revealed by the wound healing assay. In fact, migration of HPAF-II and PL45 cells was decreased on FN and LAM, and increased on COL, compared to control cells grown on plastic (NC). By contrast, HPAC was very rapid and unaffected by the substrate. SDS-zymography showed that COL induced a strong upregulation of MMP-2 activity in HPAF-II and HPAC cells, and of MMP-9 in HPAF-II and PL45 cells, compared to NC.

These preliminary results suggest that ECM components could differently affect PDAC migration and invasion, possibly depending on the differentiation grade.

The characterization of the mutual effects elicited by the tumor-stroma interplay on the cancer cell will contribute to better understand the influence of the stroma on PDAC cancer cell phenotype, in order to develop new therapeutic strategies.

References

[1] Kalluri R, Weinberg RA. The basics of epithelial-mesenchymal transition. J Clin Invest 2009; 119: 1420–1428.
[2] Erkan M, Hausmann S, Michalski CW et al. The role of stroma in pancreatic cancer: diagnostic and therapeutic implications. Nat Rev Gastroenterol Hepatol 2012; 9: 454-467.

Keywords

Epithelial-to-mesenchymal transition, tumor microenvironment, pancreatic ductal adenocarcinoma, matrix metalloproteinases