AB041. P012. The effect of pancreatic cancer patient derived serum on macrophage M1/M2 polarization

Matilda Juusola, Harri Mustonen, Markus Vähä-Koskela, Pauli Puolakkainen, Hanna Seppanen

University of Helsinki, Helsinki, Finland

Background: Monocytes differentiate into inflammatory M1 or anti-inflammatory (pro-tumorigenic) M2 macrophages in tissue. We set out to explore whether serum from pancreas cancer patients and healthy controls could alter the differentiation of monocytes into M1 or M2 macrophages.

Methods: Monocytes were left to mature into macrophages in media supplemented with pancreatic cancer patient or control serum (15%). Two different cancer cell line cells (MiaPaCa-1 and HPAF) were added to the cultures. After 2 days of co-culture, the macrophages were harvested and their expression of cluster of differentiation (CD) markers was measured by flow cytometry. Cytokine levels in serum were assessed by Q-Plex (Biosciences). Cancer cell migration rate was measured by microscopy.

Results: The pancreatic cancer patients (n=14) and control serums from healthy individuals (n=6) differed in levels of cytokines. Patient derived serum was significantly richer in IL-1b (P=0.041), IL-6 (P=0.041), IL-10 (P=0.020), TNFα (P=0.020) and had higher levels of RANTES (P=0.008). The expression of CD markers connected with macrophage differentiation changed depending on the culture conditions. Co-culture with MiaPaCa-1 and HPAF significantly increased the expression of CD209 (P=0.004) and CD86 (P<0.001). Interestingly, CD86 (M1 marker) expression increased more in the presence of control than patient serum when co-cultured with cancer cells (P=0.017). No difference was found in the initial expression of CD markers in patient derived monocytes and monocytes drawn from healthy controls (P=0.537). The presence of macrophages increased the migration of cancer cells in serum supplemented media (P<0.001). No difference was found between patient and control derived serum with respect to increased migration rate.

Conclusions: M1 polarization may be reduced in pancreatic cancer patient macrophages compared to healthy controls when cultured in autologous serum. Further studies need to be conducted to examine whether this effect is due to the altered cytokines in patient sera or due to intrinsic differences in patient-derived monocytes compared to monocytes from healthy individuals.

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