ATTACHMENT OF HUMAN CHORIOCARCINOMA CELL SPHEROIDS TO UTERINE EPITHELIAL MONOLAYERS: QUANTITATIVE MEASUREMENTS OF ADHESION

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Understanding of cell-to-cell interactions responsible for the invasive property of cancer cells is still rudimentary. In particular, the parameters involved in intercellular adhesion need to be defined. As a model for the study of adhesion and invasion, human choriocarcinoma cell lines (BeWo and JAr) grown as multicellular spheroids and human epithelial endometrial cell lines (RL95-2, HEC-1-A, KLE, AN3-CA) grown as monolayers were used in an in-vitro model system. As determined by MAIA or RIA, BeWo spheroids released the placental hormones human choriocentric gonadotropin (hCG), progesterone (P), and 17ß-estradiol (E2) into the culture medium. JAr spheroids produced hCG and P. Indirect immunofluorescence of the endometrial cell lines revealed distinct patterns of structural determinants characteristic of epithelial cells (RL95-2: + a-keratin; HEC-1-A: + a-keratin and uromorulin; KLE: + a-keratin and vimentin; and AN3-CA: + vimentin). Attachment of BeWo or JAr spheroids to monolayer cultures of the endometrial cell lines was quantified using a centrifugal force-based adhesion assay. Results showed similar patterns of attachment for both BeWo and JAr spheroids to the different endometrial cell monolayers (a) after 1 hr incubation: adhesion (measured following exposure to 12g RCF) was greatest with cell line RL95-2 (>70% of the spheroids were attached compared to 50% for poly-D-lysine control), minimal with HEC-1-A (<10% attached), and null with KLE and AN3-CA and (b) after 24 hrs incubation: attachment increased over time (with the exception of JAr x AN3-CA where 0 attachment was maintained). Significant differences between BeWo and JAr were most notably measured when comparing adhesion (a) with HEC-1-A at 5 and 24 hrs (JAr > BeWo); and (b) with AN3-CA at 24 hrs (BeWo > JAr). This assay system has identified specific endometrial cell lines which are adhesive vs. non-adhesive for choriocarcinoma cells. Further experimentation to identify and study regulation of the specific intercellular adhesive molecules involved is now possible.