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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 chorionic gonadotropin (hCG), progesterone (P), and 17-β-estradiol (E_2) 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: + α-keratin; HEC-1-A: + α-keratin and uvomorulin; KLE: + α-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 12xg 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 chonocarcinoma cells. Further experimentation to identify and study regulation of the specific intercellular adhesive molecules involved is now possible.

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