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Observation of morphological changes and cytoplasmic movement in apoptosis process

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Abstract

AIM: To investigate the relationship between morphological changes and cytoplasmic movement in apoptosis process of tumor cells.

METHODS: Human esophageal carcinoma Eca-109 cells cultured *in vitro* were treated with cisplatin (DDP, 10) for 24 h, 48 h and 72 h, respectively. A part of cells were grown in cover-glasses. Growth, death and morphological changes of the cells before and after being treated with DDP were observed under inverted microscope. The treated cells were collected and made into smears. The smears and cover-glasses were stained with HE, and observed under light microscope. Parts of cells were made into specimens routinely to be examined with transmission electron microscope. Cells that were not treated with DDP were used as control ones.

RESULTS: Eca-109 cells treated with DDP displayed shrinkage, budding, nuclear fragmentation and formation of apoptotic bodies. Some cells stuck out irregular microspikes or pseudopodia-like protrusions. Sometimes it was seen that these protrusions existed at one pole of the cells while condensed nucleus and cytoplasm existed at the other pole. Nuclear fragments together with a part of the cytoplasm protruded into the surface of the cell. When cells were treated with trypsin-EDTA in PBS, it was observed that the cells which were still adherent to plates retracted more slowly than control cells. Observation under electron microscopy showed that microvilli were not seen on the surface of apoptotic cells and were substituted by circular or semicircular protuberances in which there were a little subcellular structures or/and nuclear fragments.

CONCLUSION: Cisplatin may induce apoptosis in human esophageal carcinoma Eca-109 cells. The process of apoptosis may be accompanied by cytoskeletal damage and abnormal cytoplasmic movement.

Key words: Apoptosis; Esophageal neoplasms/pathology; Microscopy, electron, scanning transmission

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