

Glucose metabolism related enzymes may become some ideal targets to increase radiosensitivity of cancer cell

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Objective: To establish a radioresistant cell line of cancer cells and investigate the proteins related to glucose metabolism and to find out the differences between them.

Methods: Established radioresistant cell line (435R) of breast cancer cell line MDA-MB-435 through exposed to continuous X-ray radiation (2Gy a day for five days a week and a total dose of 60Gy), the radiation resistance of cells was detected by colony formation assay. Enzymes that related to the glucose metabolism of the cells were detected at the level of transcription and translation levels. The changes of the metabolite concentrations were detected with the special kits.

Results: The radioresistant cell line 435R was established after continuous X-ray irradiation and validated by colony formation assay. Expression of the GLUT1 in the radioresistant cell 435R was significantly higher than that in its parental cell 435S. The glucose metabolism related enzymes PKM2, LDHA, PDHA and IDH1 in the 435R were significantly higher than those in the 435S. The ATP levels were significantly higher in 435R compared to its parental cells.

Conclusion: Glucose uptake of the radioresistant cell was increased compared to its parental cells. Aerobic glycolysis and oxidative phosphorylation in the radioresistant cell were higher than its parental cells. The glucose metabolism related enzymes may become some ideal targets of adjustment of the radiosensitivity of cancer cells.

Biography

Hong Zhao is currently a MD student of the Department of Radiation and Medical Oncology, Zhongnan Hospital, Wuhan University. She has completed her Master's degree from the same department and has published 1 paper as co-author in reputed journal. Her major fields of interest are metabolomics and radiosensitivity of cancer.

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