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The histone methyltransferase G9a as a therapeutic target in colorectal cancer

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Neo-adjuvant Concurrent Chemo-Radiotherapy (CCRT) is a standard treatment of locally advanced Colon Cancer Cell (CRC). In order to maximize efficacy and minimize toxicity, new drugs have been developed and used in combination with CCRT. Recently, it has been shown that G9a plays a role in mediating phenotypes of Cancer Stem Cells (CSCs). This study aimed to characterize G9a as a biomarker in predicting therapy response to prevent overtreatment and adverse effects in CRC patients. The primary tumors from 39 patients who received CCRT for rectal cancer were selected. In vivo tumor xenograft models for tumorigenic properties in immune-deficient mice were developed. In vitro stemness ability was performed by tumor-sphere assays, cell response to anticancer agents and stemness-related genes analysis. Cells survived from radiation treatment and displayed high levels of G9a. A significantly positive correlation was shown between G9a and CSCs marker CD133 in locally advanced rectal cancer patients with CCRT. Knockdown of G9a increased the sensitivity of cells to radiation treatment and sensitized cells to DNA damage agents through PP2A-RPA axis. Taken together, our study theorized that G9a might serve as a novel target in colon cancer, which offers exciting potential in prediction of response to preoperative chemo-radiotherapy in patients with advanced CRC.

Biography

Mei-Ren Pan has completed her PhD from Kaohsiung Medical University, Taiwan. She is currently the Assistant Professor at Graduate Institute of Clinical Medicine, Kaohsiung Medical University.

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