Experimental study on percutaneous intratumoral injection of cytotoxic heterogeneous molecular lipid CHML for treatment of human breast cancer xenograft in nude mice  XIAO Jian-cun, ZHANG Wu, CUI Li-gang, BAI Zhi-yong, MIAO Li-ying, JIA Jian-wen, ZHAO Shi-cheng. Ultrasound Department 3rd Affiliated Hospital Peking University Beijing 100083 China

Abstract  Objective  To illustrate the antitumoral effect and mechanism of cytotoxic heterogeneous molecular lipid CHML injected intratumorally into human breast cancer xenograft in nude mice and to discuss the side effects of CHML, such as bone marrow suppression hepatic and renal functions impairment. Methods  In order to establish animal model of breast cancer, thirty five - week - old nude mice were planted subcutaneously with MCF - 7 fragments 0.2 cm × 0.2 cm × 0.2 cm of human breast cancer tissue at each of their right axillary region. Two weeks later the nude mice were divided into two groups randomly when their tumor size had reached to 0.2 ~ 0.8 cm in diameter. Group A and B underwent local injection with CHML or saline respectively. In group A CHML was injected diffusely into the tumor with a dose of 50 mg /0.5 ml tumor area cm³ once every two days 3 times in total and so was saline in group B. In order to observe the toxicity of CHML white blood cell WBC count and the activity of the serum alkaline phosphatase ALP alamine aminotransferase ALT aspartate aminotransferase AST and blood urea nitrogen BUN were determined before and after the treatment. Five nude mice in each group were killed 48 hours after the first local injection the tumor cell apoptosis was observed with TdT - mediated dUTP nick end labeling TUNEL. Two weeks after the treatment all the nude mice were killed and the information of tumor healing and lymph node metastasis were observed with autopsy and histology. Results  1. There were different degrees of apoptosis among the 5 tumors treated with CHML and very few apoptosis cells 0.01 were found in the control group. 2. All the tumors in the group A were shed and disappeared when the experiment was finished and no residual
tumor cells were found histological. Tumors of group B grew up continuously and became evidently larger than those in group A. Their average size was 0.94 ± 0.34 cm. There was no statistically significant difference in the two groups (P < 0.001). There were no evident changes of ALT, AST, ALP, BUN and WBC before and after treatment and there was no significant difference between the two groups (P > 0.05). Conclusions All the human breast cancer xenografts in nude mice were killed effectively without any obvious toxicity or side effects on bone marrow, liver and kidney during the experimental period. Apoptosis of tumor cells induced by CHML might be one of the positive factors in the treatment of breast cancer.

Key words Unsaturated fatty acid, cytotoxic heterogeneous molecular lipids, CHML, Breast cancer, Therapy, Apoptosis

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