

ABSTRACT
MECHANISM OF RADIOTHERAPY EFFECT ON RESISTANCE
CANCER STEM CELLS OF NASOPHARYNGEAL CARCINOMA BASED
ON PROTEIN PROFILE P53(WILD TYPE), *HSP70*, BMI-1 AND SHH

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Background:

Recurrences are remain frequent in patients with nasopharyngeal carcinoma (NPC), although they had received complete therapy. These recurrences were clinical manifestation form of resistance cancer cells against radiotherapy. These were the indicators of poor prognosis, since its major contribution to cause death in NPC patients. Recent studies proved that those recurrences were caused by NPC cancer stem cells (CSCs) which resistant to radiotherapy. The mechanisms of resistance NPC stem cell to radiotherapy remain unclear. The purpose of this study is to determine the mechanisms of radiotherapy effect based on the profile protein p53(wild type), *Hsp70*, Bmi-1 and Shh on resistance cancer stem cells of nasopharyngeal carcinoma.

Materials and methods:

The samples of study were the primary culture of NPC stem cells which obtained from nasopharyngeal biopsy of patients with clinical symptoms of NPC. The stem cell cultures were divided into 2 groups: 16 samples as the radiation exposure group (treatment group) and 16 samples as control. The treatment group was exposed with one dose radiotherapy of 1.5 Gy in 8x12cm radiation, with a distance of 100 centimeters for 36 seconds, and the cultures were incubated for 24 hours. Examination of the protein p53(wild type), *Hsp70*, Bmi-1 and Shh expressions were performed before and after radiation exposure in both treatment

and control groups. The investigation of protein p53(wild type), *Hsp70*, Bmi-1 and Shh expressions were performed by monoclonal antibodies with flowcytometry method.

Result:

This study proved that the expression of p53(wild type) and *Hsp70* between treatment and control groups showed insignificant differences ($p \geq 0,05$). The Increase of Bmi-1 and Shh expressions between treatment and control groups showed significant differences ($< 0,05$). Increase of Shh expression showed significant influences to increase Bmi-1 expression, but Bmi-1 has no effect on p53(wild type) expression.

Conclusion:

Mechanisms of radiotherapy effect on resistance cancer stem cells of nasopharyngeal carcinoma seen by increasing the expression of Shh and Bmi-1 without the role of p53(wild type) and *Hsp70*.

Keywords:

Nasopharyngeal carcinoma, cancer stem cells, radiotherapy, p53 (wild type), *Hsp70*, Bmi-1 and Shh.