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## Radiation response of cancer stem cells as predictive marker of radiotherapy efficiency in cervical cancer patients

**Zamulaeva Irina A**

A Tsyb Medical Radiological Research Centre, Russia

**R**adioresistance of cancer stem cells (CSCs) is considered as one of the possible causes of cancer recurrence after radiation therapy. However, little is known about quantitative changes in CSC subpopulation after radiation exposure under clinical conditions and association of these changes with the efficiency of treatment of various malignancies including squamous cell carcinoma of uterine cervix (SCCUC). Therefore, the aim of this study was to evaluate changes in proportion of CSCs in cervical scrape samples from SCCUC patients after the first few sessions of radiotherapy and compare these changes with short-term outcomes of the full course of the treatment including external and intracavitary irradiation. The degree of tumor regression was assessed 3-6 months after the treatment. Study group consisted of 34 patients at FIGO stages IB-IVA. Informed consent was obtained from all patients. Proportion of CD44<sup>+</sup>CD24<sup>low</sup> CSCs was determined by FACS analysis before the treatment and 24 hours after low-LET radiation exposure at a cumulative dose of 10 Gy to point A. Postradiation decrease in the

CSC proportion was associated with the complete tumor regression, while increase – with the partial regression. Thus, the frequency of the partial tumor regression was 5,6-fold higher in patients with postradiation increase in the CSC proportion than in other patients who demonstrated decrease in this indicator ( $p=0.04$ ,  $AUC=0.73$ ). The results demonstrated predictive value of individual radiation response of the CSC population for short-term outcomes of SCCUC treatment.

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### Speaker Biography

Zamulaeva Irina A has completed her PhD at the age of 32 years from Medical Radiological Research Centre, Russia. She is professor and Head of Department of Radiation Biochemistry of Medical Radiological Research Centre. She has over 140 publications (in English and Russian) that have been cited over 600 times, and her publication H-index is 11 according to Russian Science Citation Index. She has been serving as an editorial board member of reputed Journals.

e: zamulaeva@mail.ru



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