Iran J Radiol. 2017 May; Special issue(5):e48207. doi: 10.5812/iranjradiol.48207.

Published online 2017 April 13.

Abstract

Does Myocardial Scan with Technetium Lead to Radio Adaptive Response Among Patients Who Are Undergoing Thallium Scan? (Cytogenetic Study)

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Received 2016 December 21; **Accepted** 2017 February 08.

Abstract

Background: Low dose radiation will induce adaptation and following exposure to an adaptive dose, the cells are more resistance to following challenging doses. This phenomenon is known as radio-adaptive response. The aim of this study was to investigate the percentage of apoptotic cells in the peripheral blood samples of the patients which undergo myocardial perfusion imaging with Tc-99m prior to thallium scan to assess the induction of radio-adaptive response.

Methods: 97 samples from 74 patients, referred to nuclear medicine center of Mazandaran heart hospital for myocardial perfusion imaging which had no history of diagnostic, therapeutic, occupational and radioactive exposures during past two years, were provided. The participants were classified into four groups including control, technetium, thallium and the last group were the patients that examined by technetium followed by thallium. Then 2 mL Peripheral blood samples were obtained, the samples were studied by neutral comet assay with one-way ANOVA.

Results: The mean percent of apoptotic cells in the groups 2, 3, 4 were more than the controls and the mean percent of apoptotic cells in the patients who examined with 201Tl were more than other groups but the mean percent of apoptotic cells in the group 4 (99mTc before 201Tl) was less than that group 3(just examinated by 201Tl) and this difference was significant statistically.

Conclusions: These findings suggest that exposure to Tc-99m could induce a radio-adaptive response against the exposure of Tl-201.

Keywords: Myocardial Perfusion Imaging, Radio-Adaptive Response, Technetium, Thallium

This is an abstract presented in the 33rd Iranian congress of radiology (ICR) and the 15th congress of Iranian radiographic science association (IRSA).