ORIGINAL ARTICLE

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Assessment of fatty acid metabolism in taxan-induced myocardial damage with iodine-123 BMIPP SPECT: Comparative study with myocardial perfusion, left ventricular function, and histopathological findings

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We investigated myocardial fatty acid metabolism in taxan-induced myocardial damage in patients with advanced lung cancer. ***Patients and Methods:*** Twenty-five patients with non-small-cell lung cancer were treated with taxan combined with carboplatin intravenously for three cycles. Myocardial SPECT imaging using ^{99m}Tc-methoxyisobutyl isonitrile (MIBI) and ^{123}I-15-(*p*-iodophenyl)-3-(*R*,*S*)-methylpentadecanoic acid (BMIPP) was performed successively before and after chemotherapy. Regional uptake scores of BMIPP and MIBI were visually assessed and total uptake scores and the number of abnormal segments were calculated. Left ventricular ejection fraction (LVEF) was obtained by first-pass radionuclide angiocardiography using MIBI. Postmortem pathological examination was performed in 5 patients. ***Results:*** Total BMIPP uptake scores after chemotherapy were significantly lower than those before chemotherapy (23.4 ± 3.4 vs. 26.6 ± 0.8; $p < 0.001$). Mean LVEF showed a significant decrease after chemotherapy. Of the 25 patients, 4 exhibited a decrease in LVEF of more than 10%, 1 had a decrease in LVEF to below 50%, and 1 developed congestive heart failure. These 6 patients had significant decreases in total BMIPP uptake scores and increases in the number of abnormal segments as compared with the other 19 patients. Histopathological examination of myocardial tissue showed interstitial edema and disarrayed myocardial cells. ***Conclusion:*** Taxan impairs myocardial fatty acid metabolism. ^{123}I-BMIPP myocardial SPECT is useful for evaluating the cardiotoxicity induced by taxan.

Key words: ^{123}I-BMIPP, cardiotoxicity, paclitaxel, docetaxel, lung cancer