

Thallium-201 SPECT in advanced non-small cell lung cancer: In relation with chemotherapeutic response, survival, distant metastasis and p53 status

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Purpose: The aim of this study was to evaluate the relationship between ^{201}Tl tumor uptake, chemotherapeutic response, metastasis, p53 status and survival in non-small cell lung cancer (NSCLC). **Methods:** A total of 23 patients underwent ^{201}Tl SPECT. In 9 patients, 2nd ^{201}Tl SPECT study were performed 1 week after the 3rd cycle of chemotherapy (ChT), and early (ER) and delayed (DR) tumor/normal lung ratios and retention indices (RI) were obtained. In 15 patients p53 status was assayed with immuno-histochemical staining. The patients were divided into subgroups after the 3rd cycle of ChT; responders [R(+)] (n = 10) and non-responders [R(-)] (n = 13), distant metastasis [(M₁) n = 11] and [(M₀) n = 12], and mutant p53 status [p(+)] n = 7, p53(-) n = 8]. **Results:** The differences for ER, DR and RI values between all of the subgroups were not statistically significant. ER and DR of responders decreased significantly after ChT; from to 2.46 to 1.36 (p = 0.04) and 2.29 to 1.53 (p = 0.04), respectively. In the non-responder group, both ER and DR slightly increased after ChT (p > 0.05). **Conclusion:** Our results suggest that in NSCLC, there was a weak correlation between higher ^{201}Tl ratios and positive response to chemotherapy, absence of distant metastasis, and p53(-) status. Significant ^{201}Tl uptake decrease after chemotherapy indicates that delayed ^{201}Tl uptake can be used in evaluating the chemotherapeutic response.

Key words: non-small cell lung cancer, ^{201}Tl SPECT, chemotherapy, survival, metastasis, p53