

Technetium-99m-DTPA aerosol scintigraphy in amiodarone induced pulmonary toxicity in comparison with Ga-67 scintigraphy

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Amiodarone hydrochloride, which is used in life-threatening cardiac tachyarrhythmia, has been known to cause amiodarone induced pulmonary toxicity (AIPT) as a complication. In this study we aimed to investigate the clinical value of technetium-99m diethylene triamine penta-acetic acid (DTPA) aerosol lung scintigraphy in patients with AIPT in comparison with gallium-67 (Ga-67) scan. The study group included 26 cases, 7 patients with diagnosis of AIPT (Group A), 8 patients receiving amiodarone therapy but without AIPT (Group B) and 11 healthy subjects as a control group (Group C). All patients underwent Ga-67 and Tc-99m-DTPA aerosol scintigraphy in addition to various laboratory tests, Ga-67 scintigraphy was positive in 4 of 7 AIPT patients but quite normal in Group B. A positive correlation was found ($r = 0.52$, $p < 0.05$) between k_{ep} values determined by Tc-99m-DTPA aerosol scintigraphy and the cumulative dose of amiodarone. The mean k_{ep} values were $2.04\% \pm 0.85\%/min$, $1.30\% \pm 0.42\%/min$ and $0.86\% \pm 0.19\%/min$ for groups A, B and C, respectively. The mean clearance rate of group A was significantly faster than that of normals ($p < 0.0005$) and group B ($p = 0.028$). In addition, there was a significant difference between groups B and C ($p = 0.015$).

In conclusion, Ga-67 lung scintigraphy is a useful method for the detection of AIPT but Tc-99m-DTPA aerosol scintigraphy offers better results than Ga-67 scintigraphy. Early changes in Tc-99m-DTPA clearance may be observed in patients receiving amiodarone. The k_{ep} value in patients with AIPT is noticeably increased with respect to the control group. With its favorable physical properties, low cost, lower radiation burden and its ability to be used as an objective measure for the pulmonary clearance rate, Tc-99m-DTPA aerosol scintigraphy appears to be promising in patients receiving amiodarone therapy.

Key words: amiodarone, Ga-67 scintigraphy, Tc-99m-DTPA radioaerosol scintigraphy