Adherence of Tc-99m agents to plastic syringes

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We read with great interest the paper of Reynolds SN and Kikut J titled ''Adherence of ^{99m}Tc-Sestamibi to plastic syringes could complicate efforts in dose reduction in MPI SPECT.''[1] In this letter, we report on our own experience regarding residual syringe activity after injecting different Tc-99m-labeled compounds via syringes obtained from different manufacturers, over the last 9 months during which we conducted systemic measurements.

In 470 stress-rest ^{99m}Tc-tetrofosmin (MYOVIEW^{TM}, GE Heathcare, UK) MPI studies, the average residual activity in the syringe after tracer injection was 11.0 ± 3.1% (range 6.3-20.8%). Similar values were obtained with the use of ^{99m}Tc-sestamibi (CARDIOSCAN®, POLATOM, Poland) in 62 parathyroid studies (10.3 ± 2.9%, range 5.7-16.8%). On the contrary, syringe adherence to other ^{99m}Tc-agents (Tc-O_4, MDP, DTPA, MAG3, Mebrofenin, Phytate, MAA, and nanocolloid) was consistently low, in the order of 3-4%. The only exception was ^{99m}Tc-DMSA (Technescan® DMSA, Mallinckrodt^{TM} Medical B.V., Netherlands) used in 95 renal studies, where residual activity was 6.8 ± 2.7% (range 3.9-14.6%). During this 9-month period, we used siliconized syringes from three manufacturers (A: Jiangxi Qingshantang Medical Devices Co. Ltd., B: Jiangsu Webest Medical Product Co. Ltd., C: AnHui Honghyu Wuzhou Medical manufacturer Co. Ltd., all three made in China). The volume of the injected activity was uniformly expanded to 2 mL in syringes of 2.5 mL. In the case of tetrofosmin and sestamibi, residual activity in syringe provider C was significantly lower than that of providers A and B (7.4 ± 1.3 vs 12.3 ± 2.3, $p < .001$). This difference was not observed with other radiopharmaceuticals.

Our results are in line with the findings of other investigators regarding certain tracers (tetrofosmin, sestamibi, and DMSA), although the amount of residual syringe activity differs.[1,2] However, our Human Albumin Macroaggregates preparation (MAASOL, GE Heathcare, Italy) did not show significant syringe adsorption, as reported previously.[3] Different syringe components' constitution, tracer kits, Tc-99m-specific activity, and time from kit reconstitution to injection may account for these differences. At any rate, in accordance with former recommendations, we emphasize the need for routine measurement of full and empty syringe activity in order to determine the real dose administered to the patient.

Disclosure

None declared.

References

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