

FIRST HUMAN STUDIES EXPERIENCE FOR DOSE AND TIME OPTIMIZATION BY ^{99m}Tc-ZOLEDRONIC ACID FOR OSTEOSCINTIGRAPHY

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Aim: To study the optimal dose and optimal time of human skeletal imaging using ^{99m}Tc-zoledronic acid (Tc-99m-ZA)

Materials: 30 consecutive patients referred to the nuclear medicine department for bone scan were enrolled for the study after a valid consent.

Methods: The patients were divided into subgroups as described. Tc-99m-ZA was prepared as per the standardized protocol. Patients were divided into 3 groups of 10 each. Group A1 was injected intravenously 5 mCi of tracer, Group A2 was injected 10 mCi of tracer and Group A3 was injected 15 mCi of tracer. The patients were asked to maintain good hydration. In each group, the images were acquired at 1, 2, 2.5 hour(s) after tracer injection in all the patient groups in whole body mode using low energy high resolution (LEHR) collimator. After completion of the study, the images were interpreted independently by two observers for the presence of adequate tracer uptake in the skeleton and also for optimal bone to background ratio. Their findings were then compared and when differences were there the decision was finalized by consensus.

Findings: The skeletal images obtained using Tc-99m-ZA were quite similar to those obtained with ^{99m}Tc-methyl diphosphonate (Tc-99m-MDP). The optimal dose for skeletal scintigraphy using Tc-99m-ZA was 15 mCi. The optimal timing post tracer injection was 2 hours.

Conclusion: The images obtained with Tc-99m-ZA are very encouraging. Their revelation of human skeleton matches with that is achieved with established agent Tc-MDP. However, further studies with a large cohort of patients are warranted for clinical use of Tc-99m-ZA and establish its performance *vis-a-vis* Tc-99m-MDP.

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