

## The Effect of the Acquisition and Reconstruction Parameters in Quality of Spect Tomographic Images with Attenuation and Scatter Correction

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**Abstract :** Many physical and technological factors degrade the SPECT images, both qualitatively and quantitatively. For this, it is not always put into leading technological advances to improve the performance of tomographic gamma camera in terms of detection, collimation, reconstruction and correction of tomographic images methods. We have to master firstly the choice of various acquisition and reconstruction parameters, accessible to clinical cases and using the attenuation and scatter correction methods to always optimize quality image and minimized to the maximum dose received by the patient. In this work, an evaluation of qualitative and quantitative tomographic images is performed based on the acquisition parameters (counts per projection) and reconstruction parameters (filter type, associated cutoff frequency). In addition, methods for correcting physical effects such as attenuation and scatter degrading the image quality and preventing precise quantitative of the reconstructed slices are also presented. Two approaches of attenuation and scatter correction are implemented: the attenuation correction by CHANG method with a filtered back projection reconstruction algorithm and scatter correction by the subtraction JASZCZAK method. Our results are considered as such recommendation, which permits to determine the origin of the different artifacts observed both in quality control tests and in clinical images.

**Keywords :** attenuation, scatter, reconstruction filter, image quality, acquisition and reconstruction parameters, SPECT

**Conference Title :** ICM PBB 2016 : International Conference on Medical Physics, Biophysics and Biotechnology

**Conference Location :** Jeddah, Saudi Arabia

**Conference Dates :** January 26-27, 2016