

## عنوان مقاله:

Determination of the most appropriate energy window in order to scatter compensation with dual energy window subtraction technique (DEWST) in Tc-99m SPECT imaging

## محل انتشار:

هشتمین کنگره فیزیک پزشکی ایران (سال: 1387)

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## خلاصه مقاله:

**Aim:** Determination of the most appropriate lower energy window in order to scatter compensation with dual energy window subtraction technique (DEWST) in Tc-99m SPECT imaging. **Abstract Introduction:** Presence of scattered photons is one of the main sources of error in SPECT quantification. The aim of this work is to evaluate and improve scatter correction using dual energy window subtraction technique DEWST by determining the most appropriate Compton window for estimating scatter components in photopeak image. DEWST involves data collection in a lower energy window, which provides an estimate for the scatter component in the photopeak window. These data are appropriately weighted and subtracted from the photopeak data. DEWST has many advantages such as the scatter correction can be performed in a fast and direct manner. Scatter from sources not within the field of view can be taken into account, in contrast to most other types of scatter corrections. **Material and methods:** SIMIND, Monte Carlo code, describes a standard clinical SPECT camera and can easily be modified for almost any type of calculation or measurement encountered in SPECT imaging. In this study was tried to find the most appropriate Compton window in order to scatter correction compensation using DEWST. The photopeak window was set at 126-154 keV and the so many different low energy window with various combinations were analyzed around 80-126 keV. To attain this purpose, a line source of Tc-99m with various counts of maps by SIMIND was simulated then the result of the study used to estimate the scatter in photopeak. **Results:** the results shown that the most appropriate Compton window for scatter compensation using (DEWST) for Tc-99m SPECT imaging is about 93 KeV on other hand the central channel of the optimal window was at 65% of the photo peak channel of each crystal element and its width was  $\pm 5\%$  of the photopeak channel. And significant improvements by our proposed window in this method DEWST was observed. **Discussion and conclusion:** our results shown the Compton window around 93 KeV is the most appropriate window for scatter compensation with DEWST. However many other parameters should be evaluated for clinical approaches

## کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

