

WORKS-IN-PROGRESS

The following abstracts are Works-In-Progress submitted for the Technologist Section Program at the 38th Annual Meeting of The Society of Nuclear Medicine in Cincinnati, Ohio.

Bone & Joint

POSTERBOARD 1075

IMPROVED DETECTION AND LOCALIZATION OF BONY ABNORMALITY WITH SPECT IN LOW BACK PAIN.

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We compare the SPECT and planar bone (PB) scan in patient with low back pain(LBP) to determine the usefulness of SPECT in clinical practice.

52 patients (26M, 26F, age:13-70) with LBP had planar and SPECT scintigrams: 7 cancer, 26 trauma, and 19 chronic pain. PB were performed in multiple projection and SPECT studies were reconstructed in 3 planes. Abnormality increased uptake was localized and subjectively graded 0 to 3+.

PB was normal in 24 patients. However, 8(33%) of them had abnormality on SPECT. PB identified 49 focal lesions in 28 patients: 34(69%) with 1+ activity, 12(24%) with 2+, and 3(7%) with 3+. In contrast, 76 lesions were seen on SPECT in this group: 15(20%) with 1+ activity, 20(26%) with 2+, and 41(54%) with 3+. In lesions seen on both, activity level was greater on SPECT(2.34+ mean) than PB(1.37+ mean). 29(85%) of 34 lesions with 1+ activity increased to 2+ in 10, or 3+ in 19 on SPECT.

SPECT also provide more precise anatomical localization of abnormalities. Of 76 lesions, involvement of vertebral body was seen in 31, pedicles in 5, facet joints in 28, S-I joints in 3 and others 9.

In conclusion, SPECT bone scintigram improves the sensitivity of detection and provides more precise anatomical localization than PB. It is recommended that SPECT be done in patients with negative or mild abnormal PB.

Cardiovascular Clinical

POSTERBOARD 1076

EXCESSIVE RATE OF COMPLICATIONS DURING EXERCISE TREADMILL TEST COMBINED WITH TC99 TEBOROXIME. K.N. Ayala, J.K. Russell, and M. Tulchinsky. Hahnemann University, Likoff Cardiovascular Institute, Philadelphia, PA.

This study was conducted to compare complication rates in patients undergoing exercise treadmill test (ETT) in conjunction with Teboroxime (TX) and Sestamibi (SM).

We studied 18 consecutive patients who underwent ETT with TX and SM (similar in age, sex, resting and exercise heart rates, peak blood pressure and worklevel achieved). At peak exercise, 15 mCi of Tc99 TX or SM were injected. Images were acquired 90 seconds following injection for TX (in upright position) and 30 min following injection for SM (in supine position). One patient had syncope and four were presyncopal (all five patients were hypotensive post ETT) in TX group. The image acquisition was interrupted in all of these 5 patients. None of the patients in the SM group had complications post ETT.

We conclude that TX study after ETT, using upright position, has significant incidence (27%) of complications, presumably due to lack of adequate cooling down period accentuated by an upright posture. This was not observed with SM studies due to adequate cooling down and supine position following ETT.

Instrumentation & Data Analysis: General

POSTERBOARD 1077

WARNING TO PROSPECTIVE BUYERS: FOIL COLLIMATORS MAY FOOL YOU. B.A. Patel, M.J. Blend, D.A. Rubas, E. Byrom, C. Bekerman. Division of Nuclear Medicine, Humana Hospital-Michael Reese, Chicago, Illinois 60616.

Imperfections such as septal tears, improper alignment of channels and improper seating can be built into collimators at the time of manufacture. Collimator uniformity should closely match the intrinsic uniformity of the camera during acceptance testing. The purpose of this study was to compare the collimator uniformity of a high resolution foil collimator to that of a cast collimator. A 5 mCi point source of Tc-99m placed 15 feet from the collimator face was imaged with both collimators. Line sources made with 10 ml pipettes and filled with a solution containing 100 uCi of Tc-99m were imaged at 5, 10, 15, 20, 25 and 30 cm from the collimator face above and below the patient table. In addition, a SPECT phantom filled with 10 mCi Tc-99m was imaged with both collimators. Transaxial images were reconstructed using a Ramp filter with and without prefiltering (Hanning, 1.0 cutoff) and displayed as 1 and 2 pixel slices. In each case, the uniformity correction was based on data obtained with the same collimator. In the distant point source images using the foil collimator, linear streaks and a sizeable cold defect were seen which appeared with the sheet source images. The linear streaks were also present in the line source images at a distance of 15 to 30 cm from the camera. The SPECT reconstructed images showed small "ring" artifacts in 3 areas. These artifacts were enhanced with prefiltering. None of these defects were seen with the cast collimator. These findings illustrate the importance of properly evaluating the uniformity of each collimator purchased with a new system.