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PET IMAGING PROTOCOL VARIATIONS IN CLINICAL PRACTICE

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BACKGROUND-AIM

The aim of this study was to evaluate the variations in clinical practice for PET application in a single center.

METHODS

DICOM headers from 167 scans were analysed to collect information on the scanning procedure. The scans were acquired following the routine local PET/CT protocol based on international guidelines (uptake time: 60 ± 10 min; activity/body weight: 5.3 MBq/kg; residual activity: 5MBq)

RESULTS

The injected activity (360 ± 75 MBq) was ranging between 189 and 510 MBq due to the fact that center scaled it to body weight. The effective dose, calculated from ICRP, was (5.10 ± 0.62)mSv. Uptake time mean value, obtained from a range value of 45-213 minutes, was (79 ± 29) min. A normal distribution of uptake time over the 55-110 min range was found; the adherence to EANM guidelines for PET scanning (uptake time of 60 ± 10) was confirmed in 102 (61%) PET. The liver SUV mean and max for all patients were (2.08 ± 0.73) g/ml and (3.46 ± 1.40) g/ml respectively while the Mediastinal Blood Pool Structures (MBPS) SUV mean and max were (1.43 ± 0.38) g/ml and (2.02 ± 0.54) g/ml respectively. Instead the right-lung SUV mean was (0.46 ± 0.14) g/ml and the SUV max was (0.92 ± 0.29) g/ml. No relationship was found between liver mean and injected activity, patient weight or height.

CONCLUSION

A standardized acquisition protocol was established to reduce the error in the determination of the SUV. The publication of EANM guidelines for tumor imaging recommending standardization of PET methods is timely (Boellard 2010).