INTRODUCTION

123I-ioflupane is used in imaging of dopamine transporters for the investigation of Parkinson’s disease or Lewy body dementia and is today common in the nuclear medicine clinical departments. Despite this, the biokinetic behavior of 123I-oflupane is only investigated in a few studies. In order to estimate the absorbed and effective dose, the biokinetics and activity content of DaTSCAN™ ioflupane (123I) in different organs were determined using both whole-body (WB) planar and thoracic SPECT/CT imaging.

MATERIALS AND METHODS

Eight adult males (62-78 years) referred for a routine examination, were included in the study. Whole-body conjugate view emission scans were performed at five different time points p.i.. SPECT/CT measurements were performed at 30 min p.i. (thorax) and 3 h p.i. (brain). Blood samples were collected prior to each whole-body scan and all voided urine was collected from the time of injection to 48 h p.i.. Activity quantification was made based on the activity seen in the SPECT/CT images and the shape of the time-activity curve was based on the planar images. Correction for attenuation, scatter and background activity was made. Transfer rate coefficients for all organs were estimated using SAAMII software and the number of disintegrations in the source organs were calculated as the area under the curve based on the best fitted time-activity curves obtained from the compartmental model in SAAMII. Organ and effective doses were calculated using the OLINDA/EXM1.1 software.

RESULTS

The average effective dose to the patients per unit administered activity was determined to 0.025 mSv/MBq, which yields that a patient undergoing an examination with 185 MBq 123I-ioflupan receives an effective dose of approximately 4.6 mSv. This is an effective dose well within the range of doses which are acceptable given to patients undergoing a nuclear medicine investigation.