

Tytuł pracy: Accuracy Assessment of Fitting Methods with Reduced Time Sampling in ¹³¹I-MIBG and ^{99m}Tc-HYNIC-TOC Dosimetry Workflow

Autor: Sara Kurkowska

Afiliacja: Department of Nuclear Medicine, Pomeranian Medical University in Szczecin, Poland

Adres email: sara.kurkowska@pum.edu.pl

Współautor, Afiliacja, adres email: Carlos Uribe Department of Molecular Imaging and Therapy, BC Cancer, Vancouver, British Columbia, Canada curibe@bccrc.ca

Bożena Birkenfeld Department of Nuclear Medicine, Pomeranian Medical University in Szczecin, Poland

bozena.birkenfeld@pum.edu.pl

Hanna Piwowarska-Bilska Department of Nuclear Medicine, Pomeranian Medical University in Szczecin, Poland

hanna.piwowarska.bilska@pum.edu.pl

Autor prezentujący: Sara Kurkowska

Telefon kontaktowy: 663726397

Afiliacja: The study aimed to compare different fitting methods, performed as part of dosimetry workflow, for patients imaged with ¹³¹I-MIBG and ^{99m}Tc-HYNIC-TOC, based on different time points (three, two, and one).

Methods: Two cohorts of 10 patients each underwent three WB scans (¹³¹I-MIBG: 1, 24, 48 hours; ^{99m}Tc-HYNIC-TOC: 1, 4, 24 hours post-injection) and SPECT/CT scan (¹³¹I-MIBG: 24 hours; ^{99m}Tc-HYNIC-TOC: 4 hours post-injection). Pharmacokinetic analysis was performed based on WB scans, and quantitative SPECT was then used to scale the counts into activity. Segmentation was performed with Hermes software, and the curve modeling with the SciPy library. Different functions and time points (t.p.) were applied: 1) mono-exponential curve (3 t.p.); 2) bi-exponential curve (3 t.p.); 3) mono-exponential curve (last two t.p.); 4) mono-exponential curve (first two t.p.); Hänscheid method with: 5) 1st t.p. 6) 2nd t.p. 7) 3rd t.p. The integral was calculated and normalized to injected activity. Method 1 served as a reference for healthy organs, and method 2 for lesions. Mean percentage differences were calculated for each method.

Results: In ^{99m}Tc-HYNIC-TOC studies, method 4 showed the smallest percentage differences for organs (kidney right: -0.5%, kidney left: -1.2%, spleen: 0.3%, liver: -1.9%) and method 6 for lesions (2.1%). In ¹³¹I-MIBG studies, method 3 showed the smallest differences for organs (liver: -2.25%, whole body: 1.7%), and method 7 for lesions (liver: -3.8%, whole body: 4%).

Conclusion: In ^{99m}Tc-HYNIC-TOC studies, method 4 demonstrated the smallest difference compared to the reference methods for both lesions and organs, while for ¹³¹I-MIBG methods 3 and 7.

Obraz uzupełniający: [Przesłany plik](#)