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Children with drug-resistant focal epilepsy have a compromised quality of life. Epilepsy surgery can control or significantly reduce the seizures. Aparicio et al. assessed and compared the usefulness of PISCOM, a new nuclear imaging processing technique, with SISCOM and 18F-FDG PET (FDG-PET) in pre-surgical evaluation of paediatric drug-resistant focal epilepsy.

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Twenty-two children with pharmcorefractory epilepsy, mainly extratemporal, who had undergone presurgical assessment including SISCOM and FDG-PET and with postsurgical favorable outcome (Engel class I or II) for at least two years, were included in this proof-of-concept study. All abnormalities observed in SISCOM, FDG-PET and PISCOM were compared with each other and with the known epileptogenic zone (EZ) based on surgical treatment, histopathologic and surgical outcome results. Global interobserver agreement, Cohen's Kappa coeficient and PABAK statistic were calculated for each technique.

ISCOM concordance with the known EZ was significantly higher than SISCOM (p<0.05), and no statistically differences were found with FDG-PET. PISCOM showed successful identification in 19 of 22 cases (86%), successful concordant with FDG-PET in 17 (77%), and SISCOM in 11 (50%). If we consider PISCOM and FDG-PET results together, both techniques successfully localized the known EZ in all cases. The measures of agreement between two experts in nuclear medicine were higher in PISCOM than in SISCOM and FDG-PET.

PISCOM could provide complementary presurgical information in drug-resistant paediatric focal epilepsy, particularly in cases in which FDG-PET is doubtful or negative, replacing SISCOM and sparing the use of interictal SPECT<sup>1)</sup>

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Aparicio J, Niñerola-Baizán A, Perissinotti A, Rubí S, Muchart J, Candela-Cantó S, Campistol J, Setoain X. Presurgical evaluation of drug-resistant paediatric focal epilepsy with PISCOM compared to SISCOM and FDG-PET. Seizure. 2022 Mar 15;97:43-49. doi: 10.1016/j.seizure.2022.03.010. Epub ahead of print. PMID: 35325841.

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