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Meeting abstract

Metabolism of (*R*)-[^{11}C]verapamil in epilepsy patients

Aiman Abrahim[1,5], Gert Luurtsema[6], Martin Bauer[1], Rudolf Karch[2], Christoph Baumgartner[3], Kurt Kletter[4], Markus Müller[1] and Oliver Langer*[1,5]

Address: [1]Department of Clinical Pharmacology, Medical University of Vienna, Austria, [2]Department of Medical Computer Sciences, Medical University of Vienna, Austria, [3]Department of Neurology, Medical University of Vienna, Austria, [4]Department of Nuclear Medicine, Medical University of Vienna, Austria, [5]Department of Radiopharmaceuticals, ARC GmbH, Seibersdorf, Austria and [6]Department of Nuclear Medicine and PET Research, VU University Medical Center, Amsterdam, The Netherlands

Email: Oliver Langer* - oliver.langer@meduniwien.ac.at

* Corresponding author

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Introduction

(*R*)-[^{11}C]Verapamil (VPM) is a new positron emission tomography (PET) tracer to measure P-glycoprotein (P-gp)-mediated transport at the blood-brain barrier (BBB). Owing to the lack of a suitable reference region in brain that is devoid of P-gp, a metabolite-corrected arterial input function is required for quantitative analysis of VPM PET data [1]. The aim of this study was to compare metabolism of VPM in epilepsy patients and healthy volunteers.

Methods

Selected arterial blood samples from 9 patients, who underwent VPM PET, were analyzed for radiolabeled metabolites by a previously described combined solid-phase extraction/HPLC assay [2].

Results

VPM metabolism was significantly faster in patients as compared to healthy volunteers [1] (unchanged VPM at 60 min after injection: 26.1 ± 6.4 vs. 49.0 ± 13.4%, $p < 0.05$, *t*-test).

Conclusion

Faster metabolism of VPM in epilepsy patients may be caused by CyP450 enzyme induction by antiepileptic drugs. Based on these data caution is warranted when using an averaged arterial input function derived from healthy volunteers for the analysis of patient data. As radiolabeled metabolites of VPM are known to cross the BBB [1], different kinetic modeling parameters obtained in patients and healthy volunteers might be at least partly attributed to different rates of tracer metabolism rather than to differences in cerebral P-gp activity.

References

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