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[18F]MC225 and PET

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Stellingen

1. P-glycoprotein is involved in the efflux transport across the blood-brain barrier of a wide variety of compounds, including amyloid- β and neurotoxins, and might therefore play an important role in the onset of neurodegenerative diseases (chapter 2).
2. [^{18}F]MC225 is a specific radiotracer for evaluation of the P-glycoprotein transporter function at the blood-brain barrier (chapter 3 and 5).
3. PET imaging outcomes can be interpreted semi-quantitatively with the use of a standardized uptake value (SUV). However, for [^{18}F]MC225 SUV outcomes are not accurate and pharmacokinetic modeling methods are needed to quantify the P-gp function (chapter 4).
4. For quantification of the P-gp function at the human blood-brain barrier using [^{18}F]MC225 a reversible two tissue compartment model is the model of choice and should be used in future studies (chapter 4).
5. Although P-glycoprotein is classified as efflux transporter, its function can be best described using the volume of distribution rather than the k_2 (chapter 4).
6. To date, a non-invasive method for quantification of [^{18}F]MC225 is not available. Future studies are needed to evaluate the use of an image derived input function, with the use of a larger blood pool to overcome partial volume effects (chapter 7).
7. [^{18}F]MC225 allows to measure differences in P-glycoprotein function at the blood-brain barrier in healthy volunteers and patients diagnosed with Alzheimer's disease (chapter 8).
8. Besides its localization at the blood-brain barrier, P-glycoprotein is also located at the jejunum, kidneys and liver. Future studies could reveal if P-glycoprotein plays a role in the gut-brain axis.
9. P-glycoprotein is involved in the pathophysiology of treatment resistant depression. Quantification of the P-glycoprotein function might be one of the first steps towards a personalized medicine approach in psychiatric diseases.
10. 'Life is really simple, but we insist on making it complicated' - Confucius (regarding the overwhelming and increasing amount of paperwork required for studies involving human participants).
11. Finishing a PhD is like riding your triathlon-bike: to keep your balance, you must keep moving forward.
12. 'There is only one thing that makes a dream impossible to achieve: the fear of failure.'
- Paulo Coelho, The Alchemist.