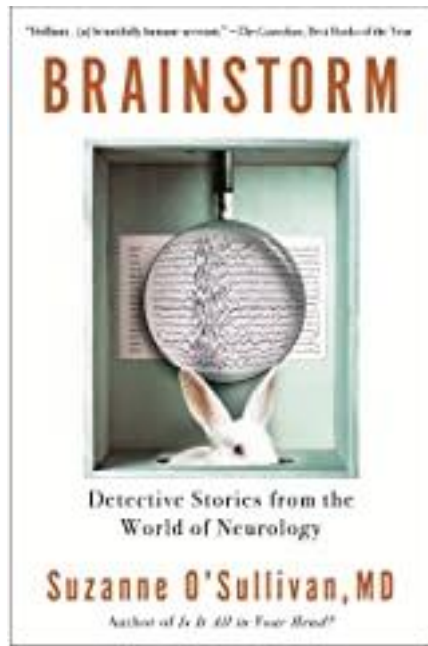




^{18}F -FDG PET/CT in dementia

Donatienne Van Weehaeghe, MD PhD

Nuclear medicine physician



Vorbereiding



Thuis

- ▶ 4-6 uur vasten (insuline stop)
- ▶ Cave corticosteroiden voor sommige indicaties

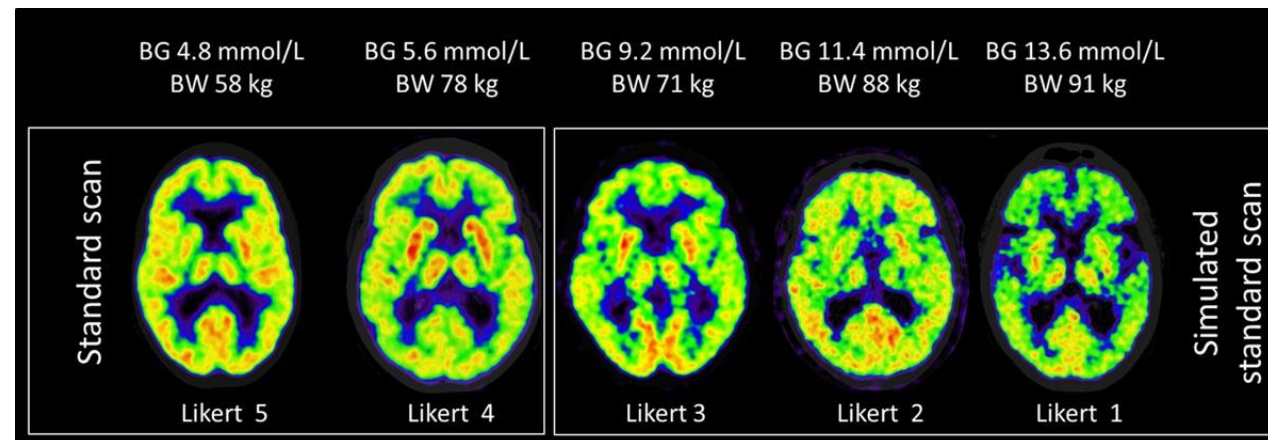
Departement nucleaire geneeskunde

- ▶ Intraveneuze lijn
- ▶ Glycemie?



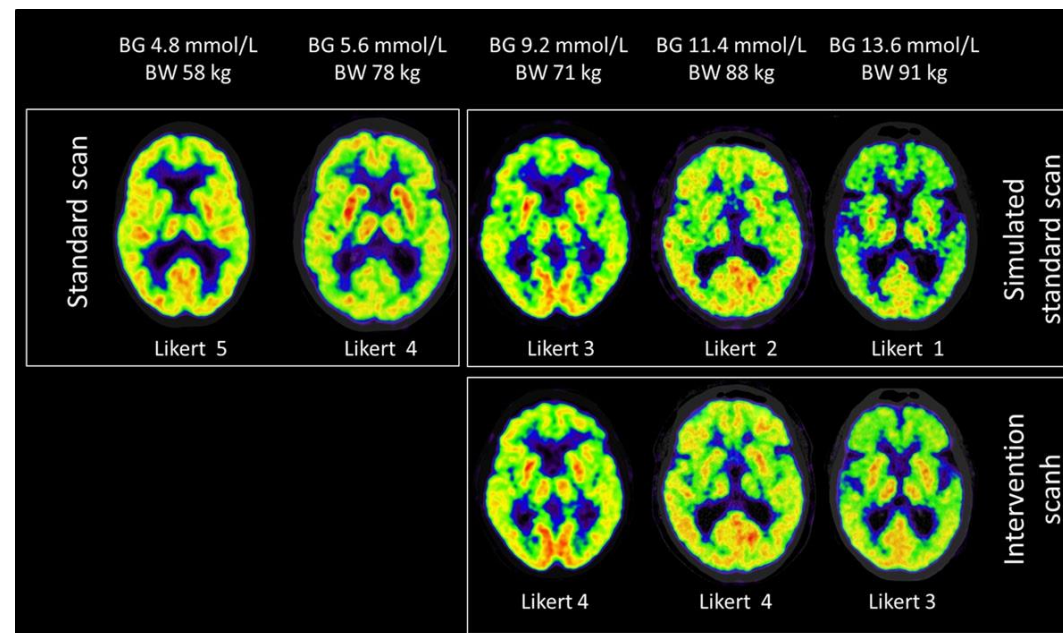
Vorbereitung

- ▶ Ideaal glycemie < 160 mg/dl
- ▶ Glycemie > 160 mg/dl => gedaald witte/grijze stof contrast, meer uitgesproken in posterieure cortex



Vorbereitung

- ▶ Glycemie < 180 mg/dl => scan zoals normaal
- ▶ Glycemie > 180 mg/dl => overweeg om scantijd of activiteit te verhogen (cave beweging)
- ▶ Glycemie > 200 mg/dl => liefst uitstel



Vorbereitung

- ▶ 15 minuten voor injectie en 20 minuten na injectie: patient plaatsen in rustige ruimte (niet spreken / luisteren naar muziek...)
- ▶ Sedatie: zo laat als mogelijk, minimaal 15 minuten tussen sedatie en injectie FDG

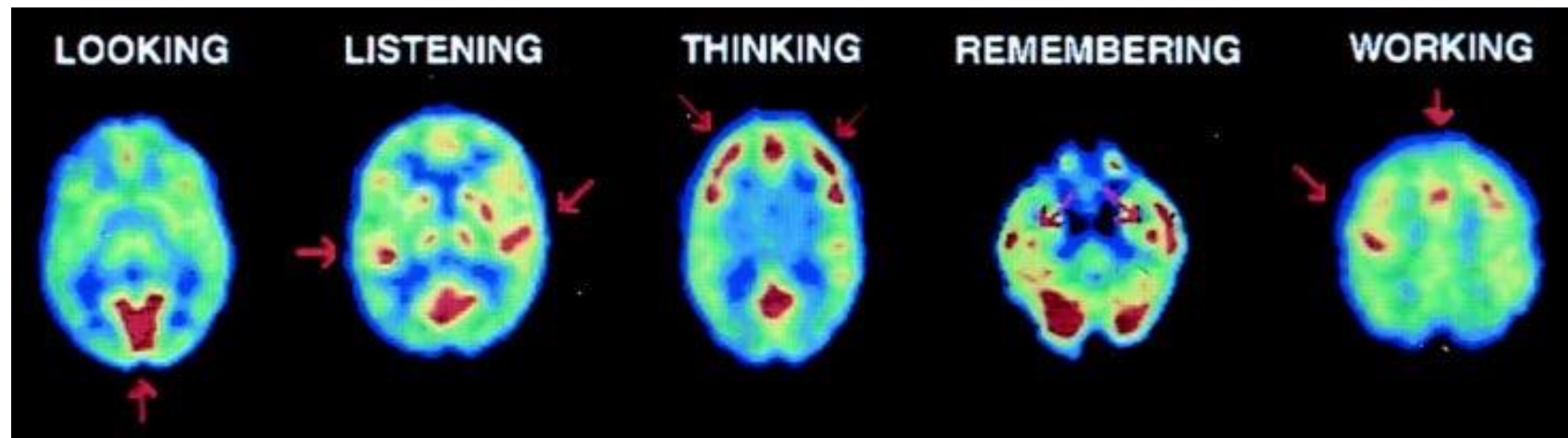
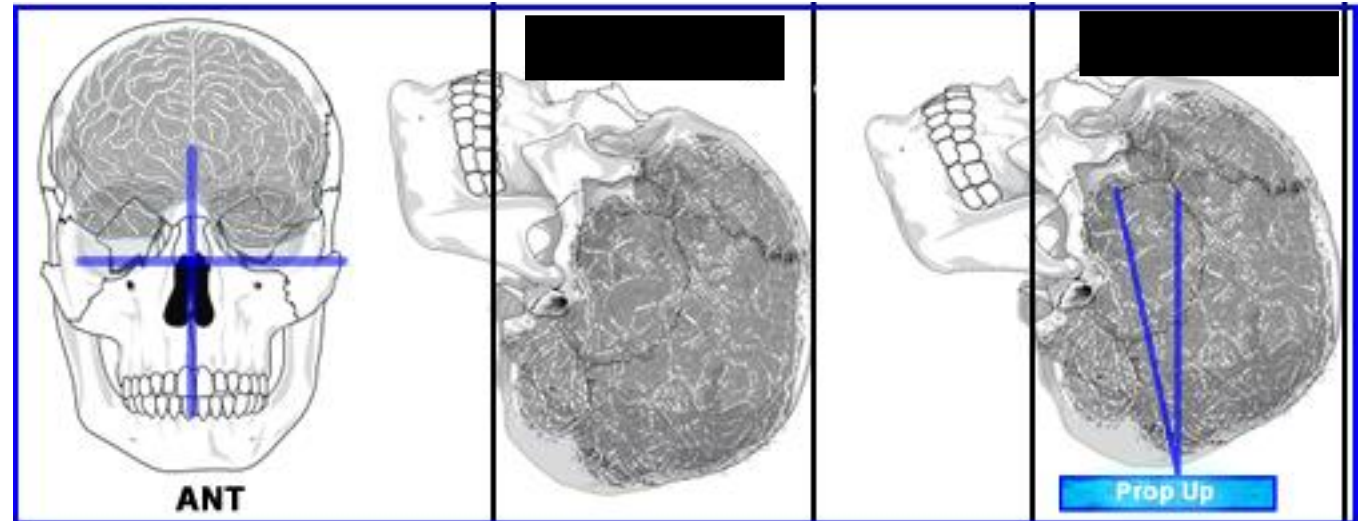
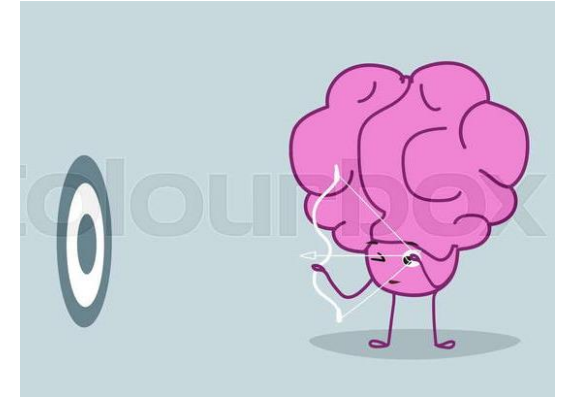
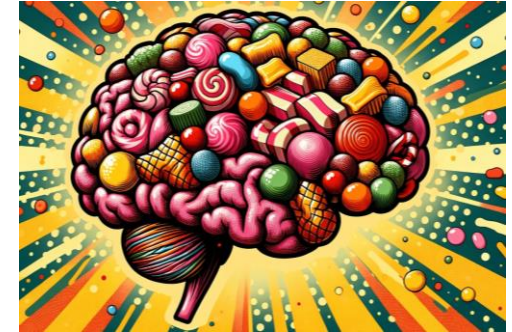


Figure from Positron emission tomography: Its 65 years.

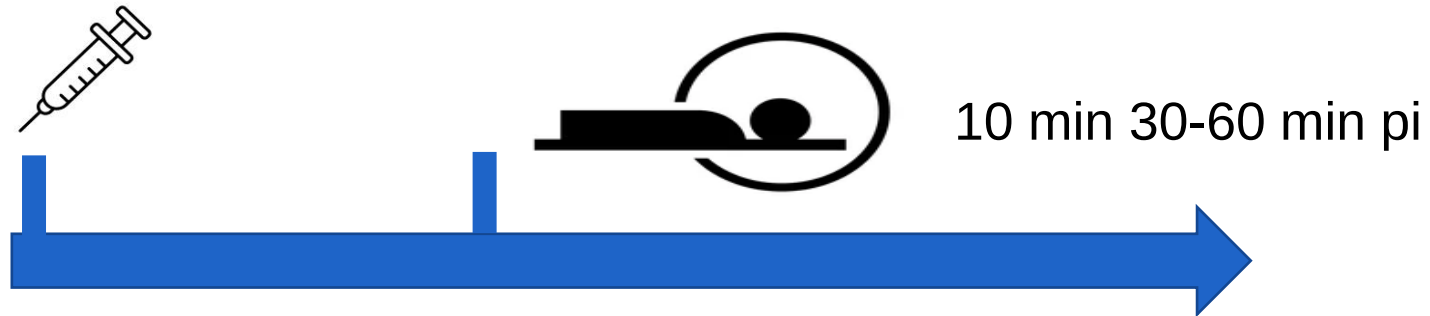
Acquisitie



Acquisitie



Dosis: 150 MBq



Controle

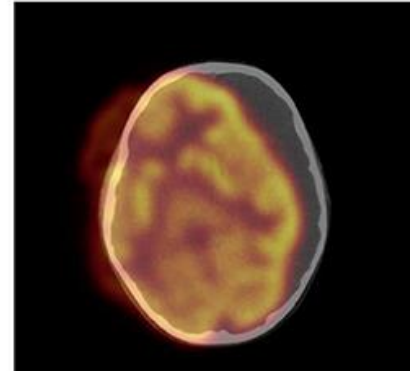
1. Beweging?

- ▶ Tussen PET en CT?

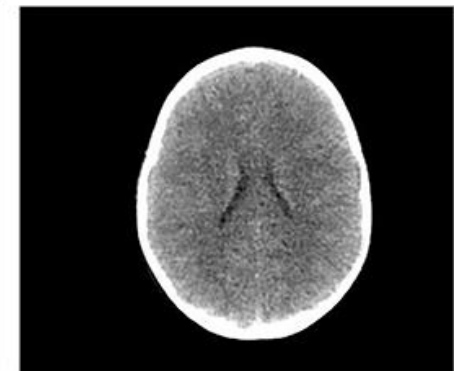
A



B



C



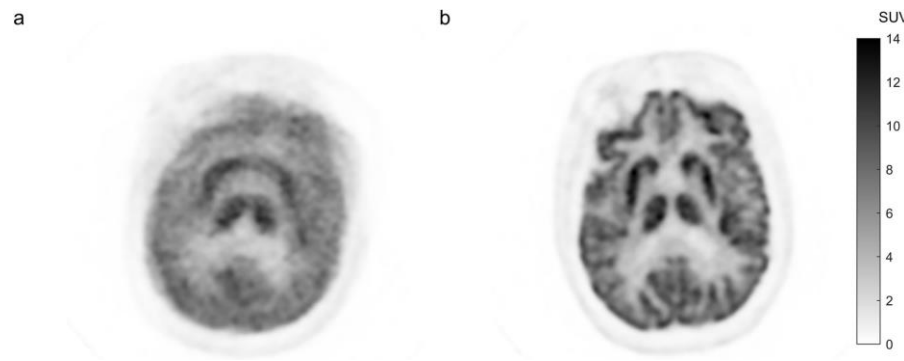
Phurbhoo et al. Front Nucl Med 2022.

Controle

1. Beweging?

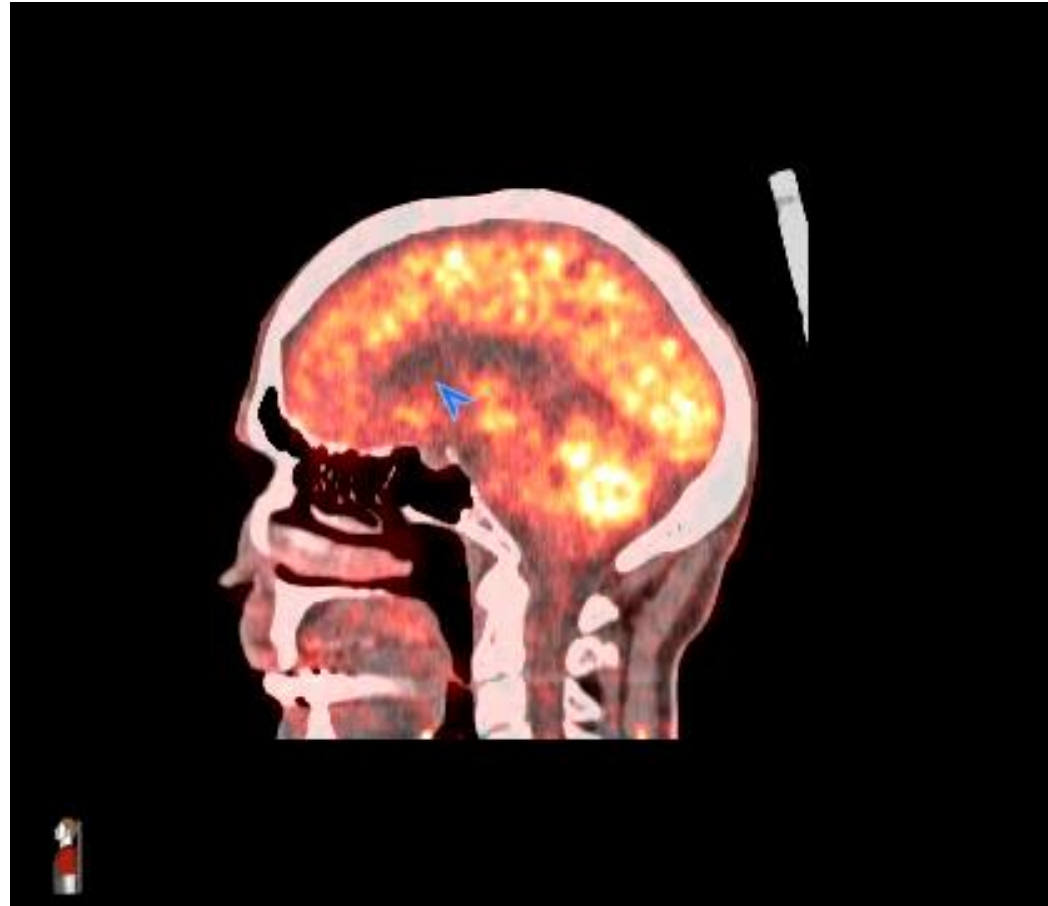
► Tussen PET en CT?

► Tijdens PET?



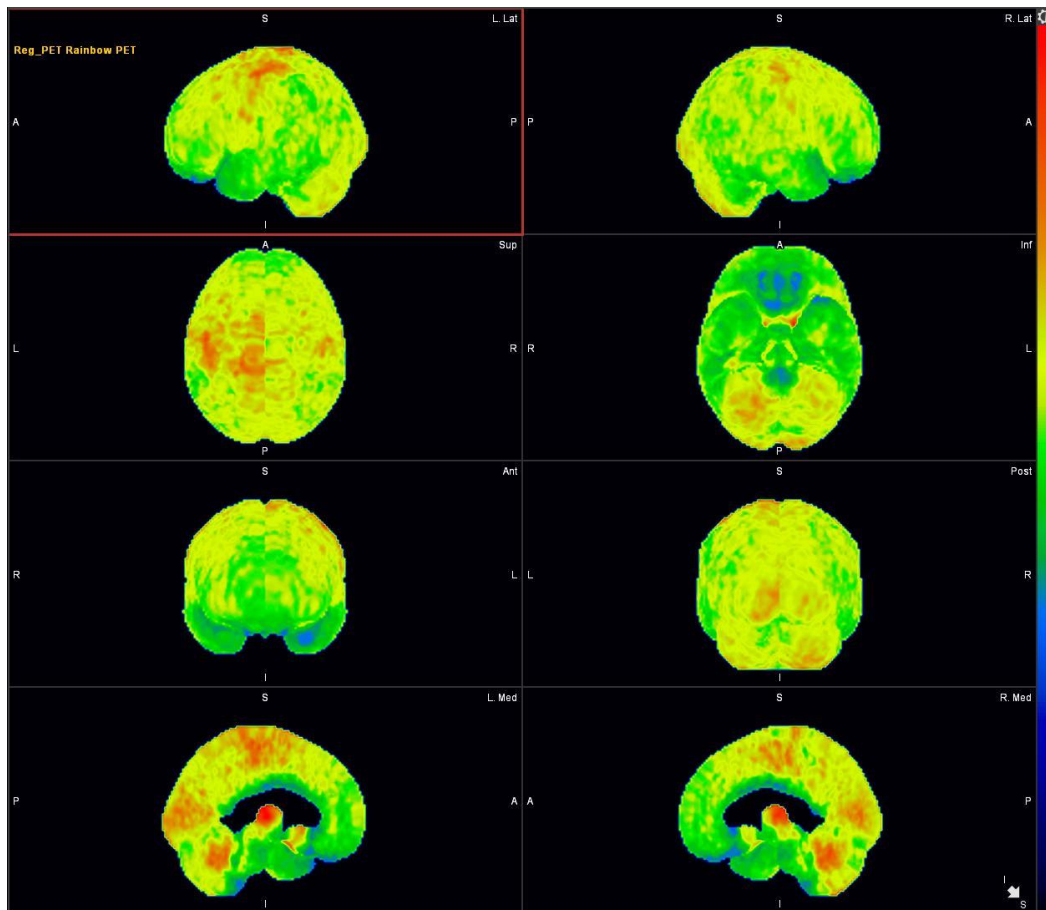
Bradley et al. Journal of neurology 2021.

Voorbeeld

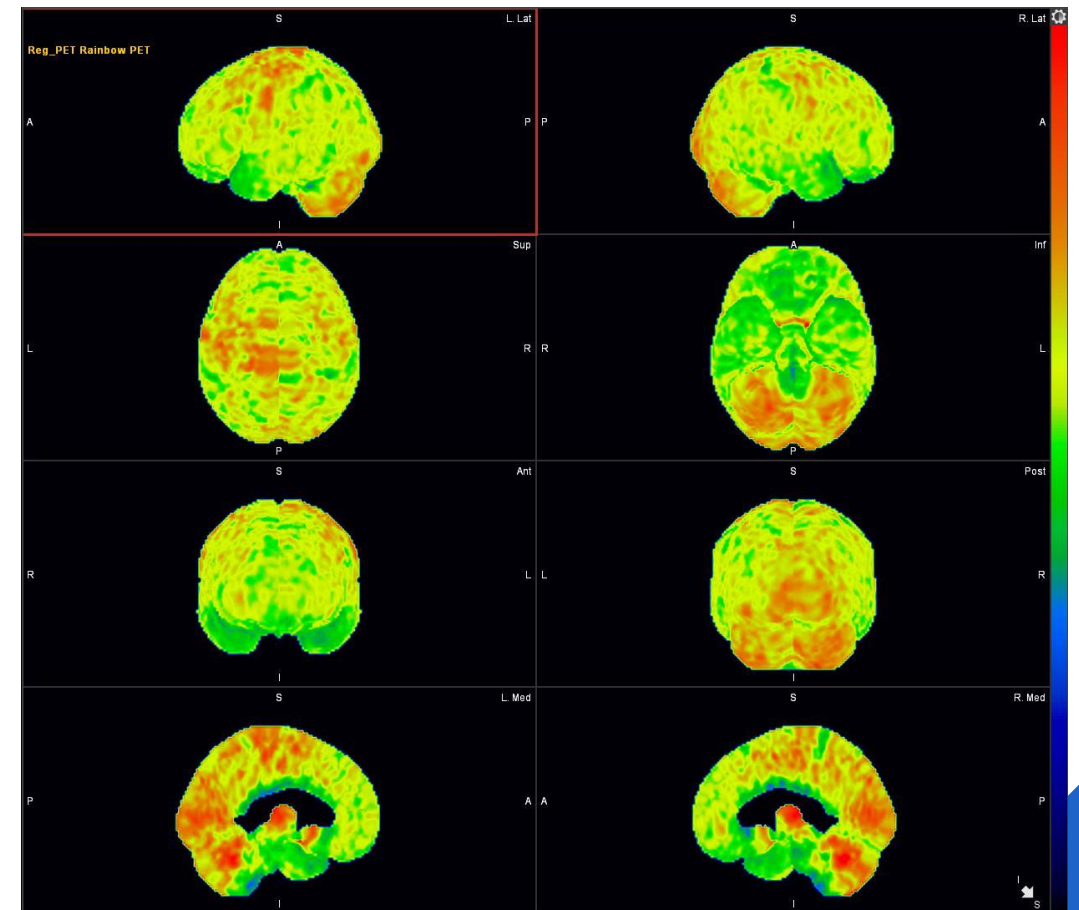


Voorbeeld

Oude – met beweging

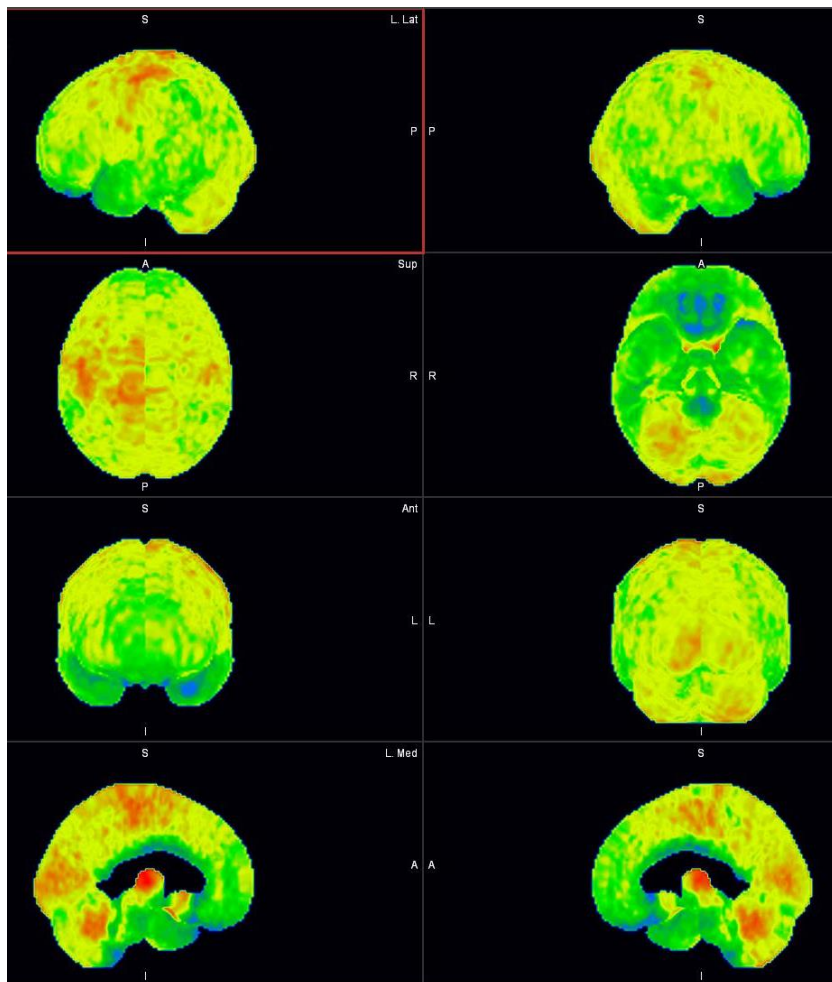


Oude - frame 1-2 (2 minuten)

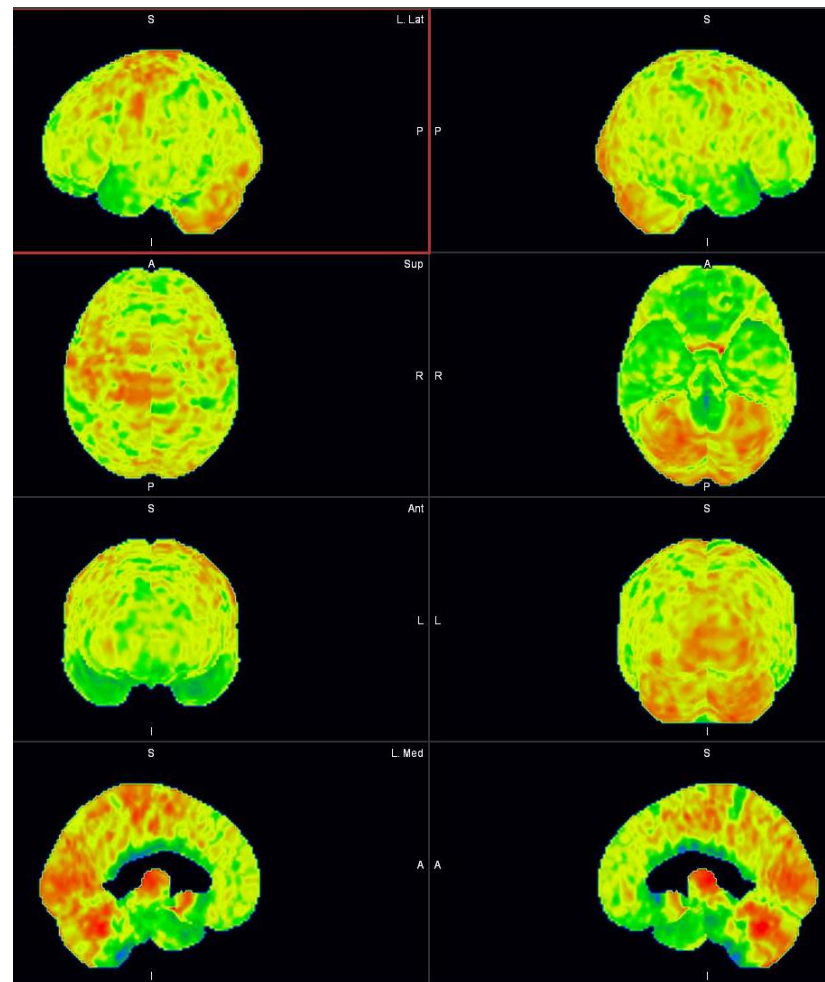


Voorbeeld

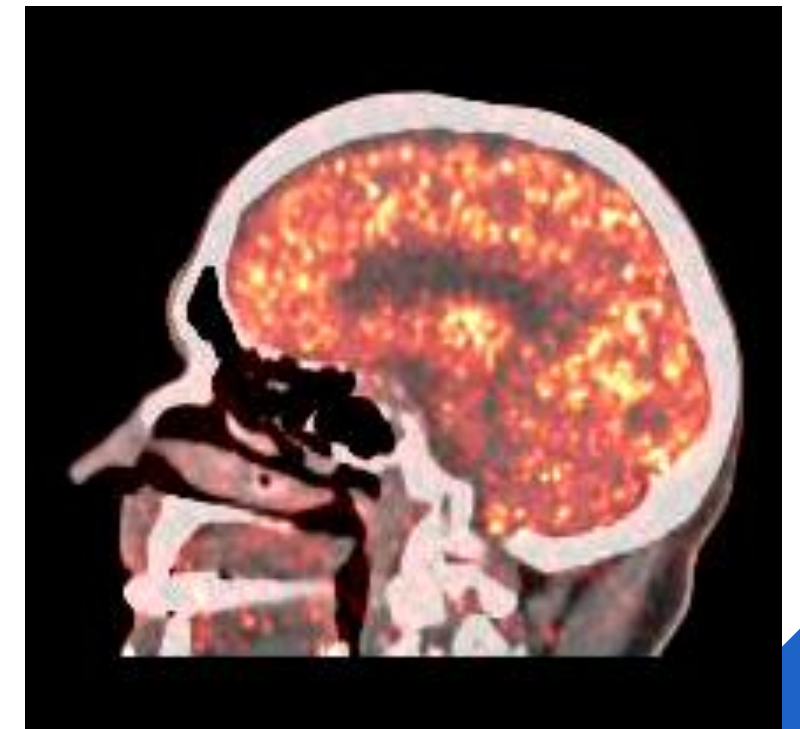
2021 – met beweging



2021 - frame 1-2 (2 minuten)



2023 – geen beweging

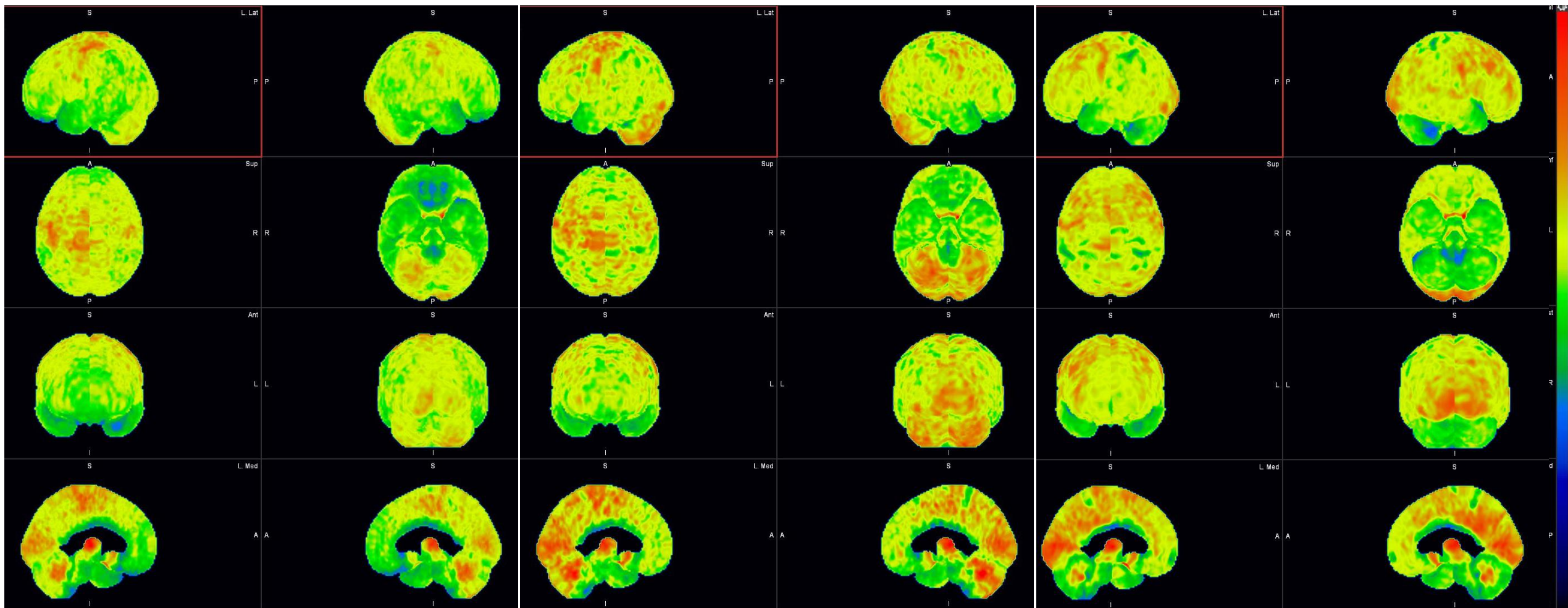


Voorbeeld

2021 – met beweging

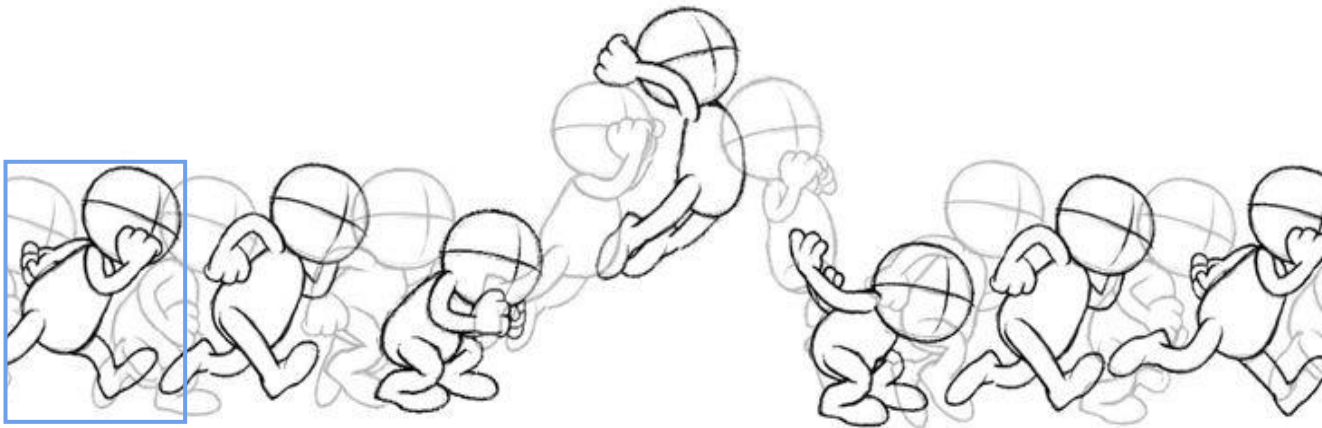
2021 - frame 1-2 (2 minuten)

2023 – geen beweging

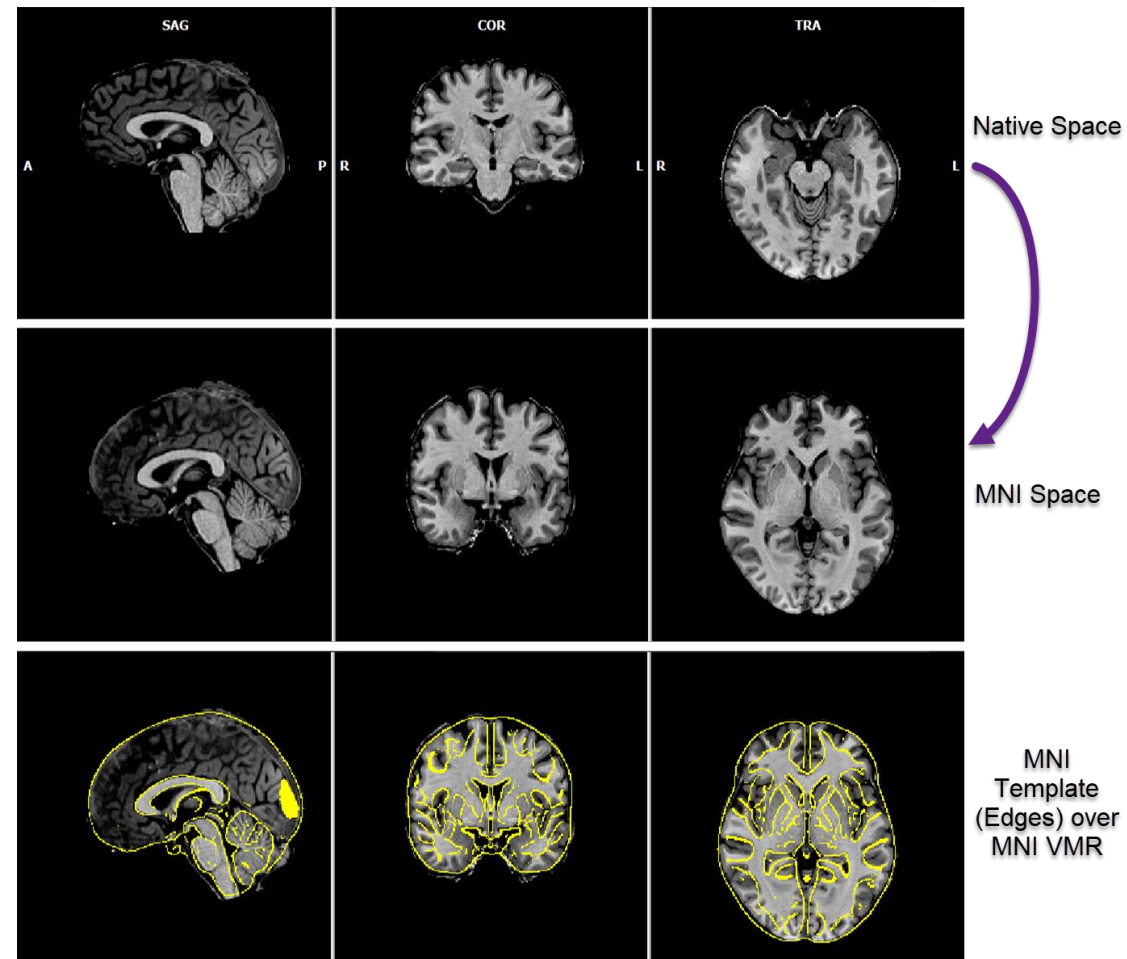


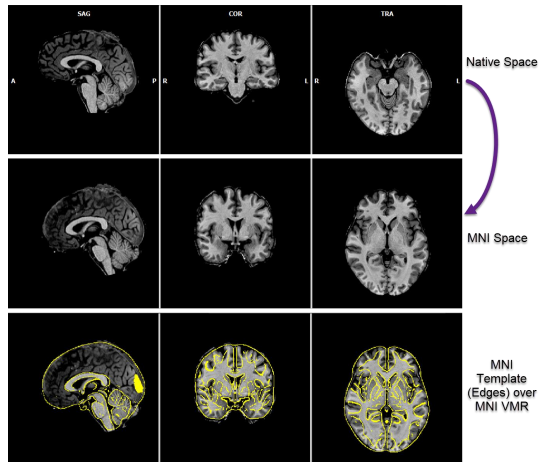
Controle

- ⇒ Belang van dynamische reconstructie
- ⇒ Selectie van frames zonder beweging of bewegingscorrectie

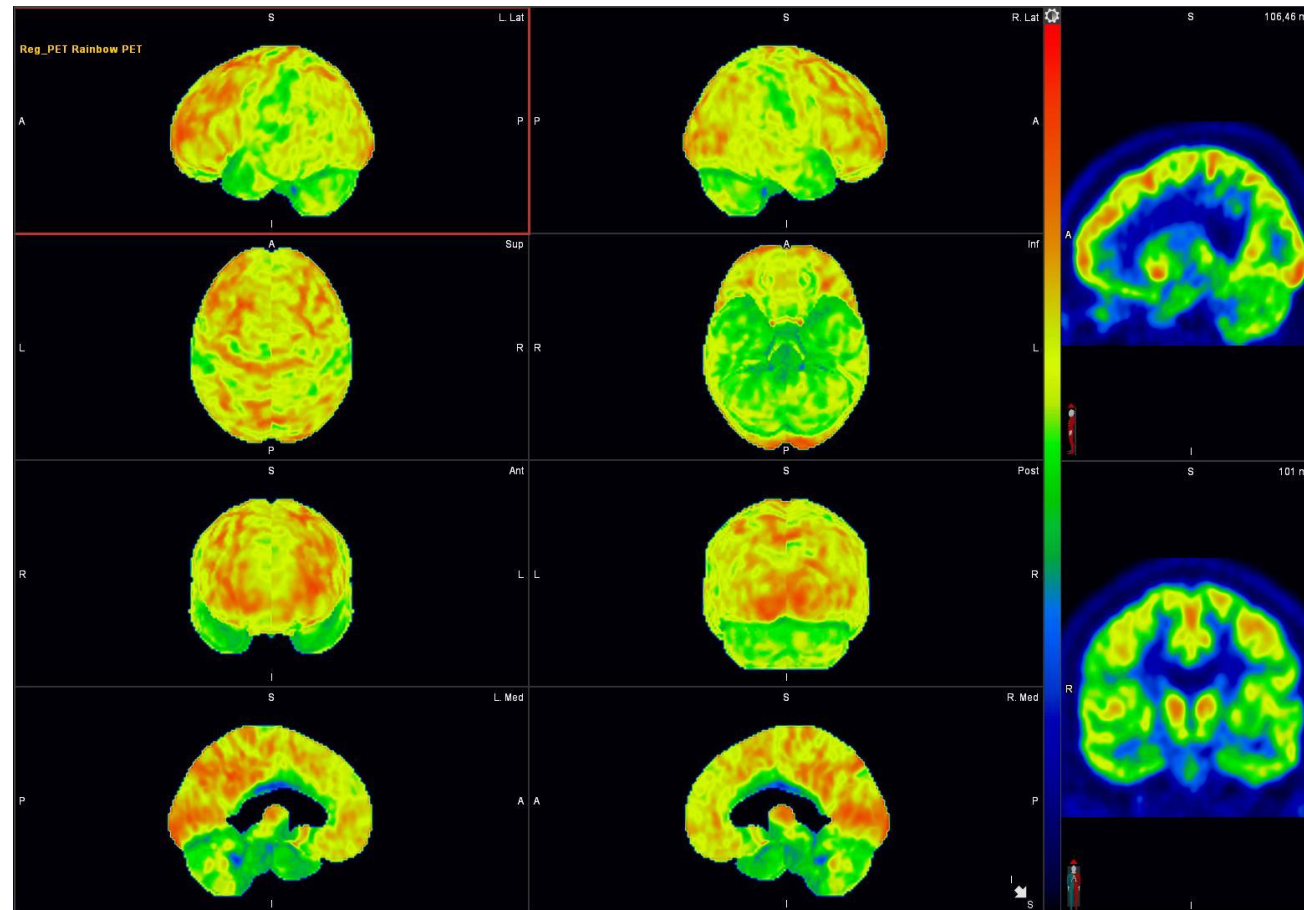


Analyse



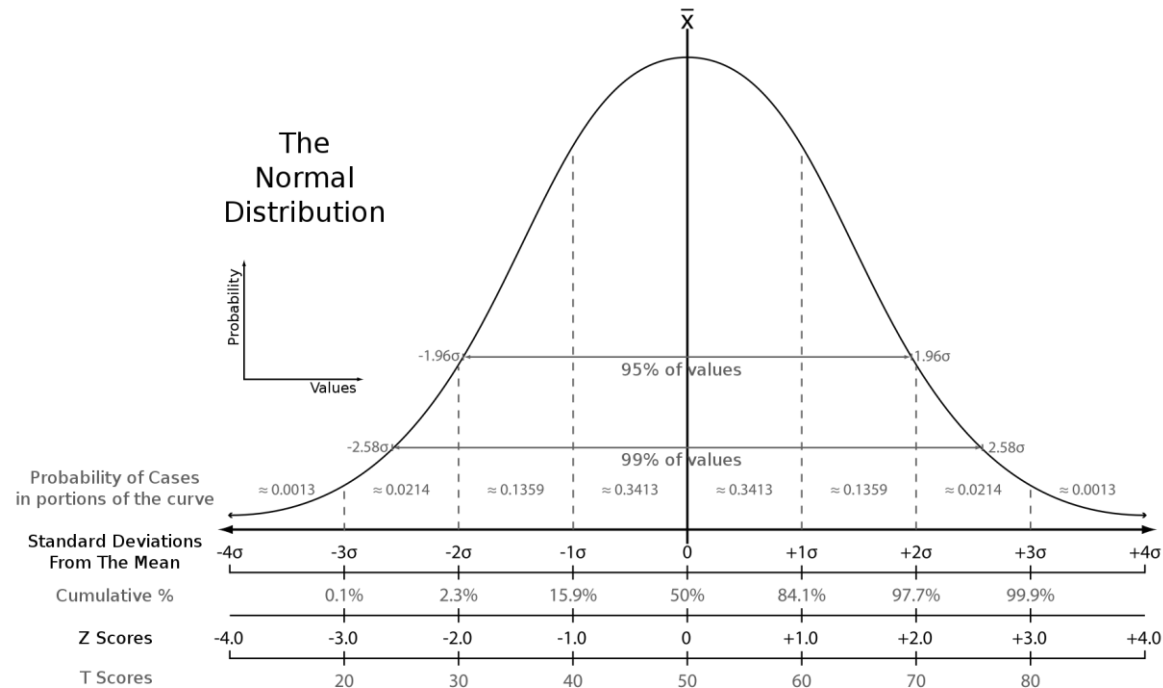


Analysis

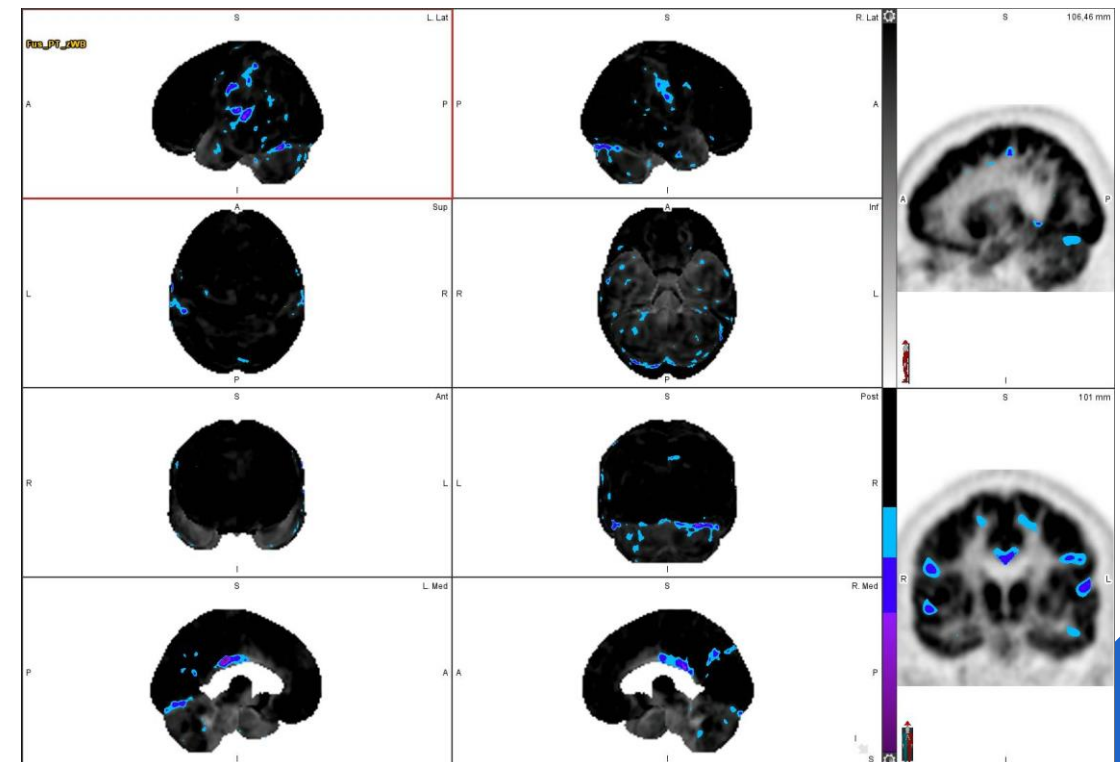


Analysis

$$\text{Z-waarde} = \frac{\text{SUV} - \text{gemiddelde SUV controle}}{\text{Standaard deviatie SUV controle}}$$



Normalisatie pons / cerebellum / volledige hersenen



Klinische inlichtingen heel belangrijk:

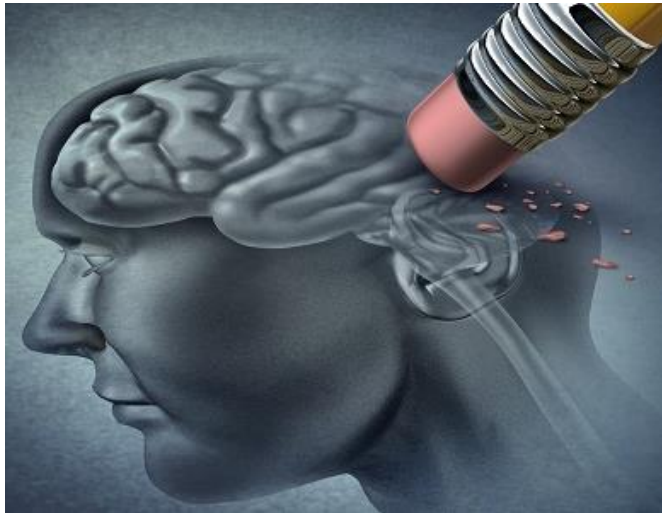
periode? jaren/maanden/dagen

symptomen? Visuele hallucinaties/geheugenklachten/....

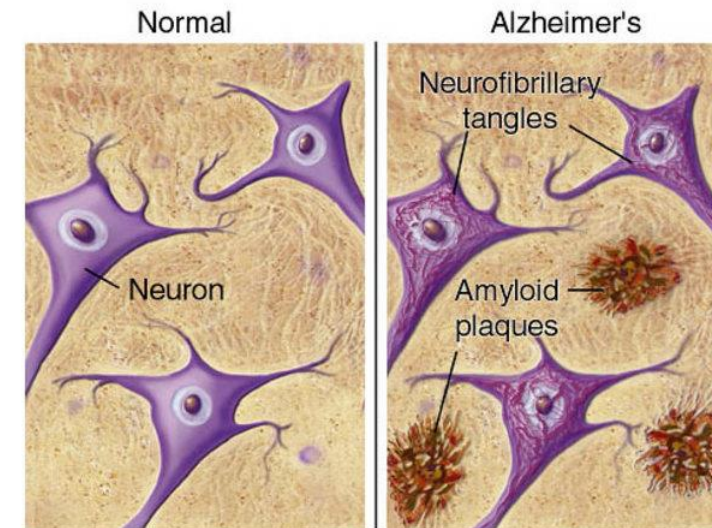
familiaal?



Alzheimer



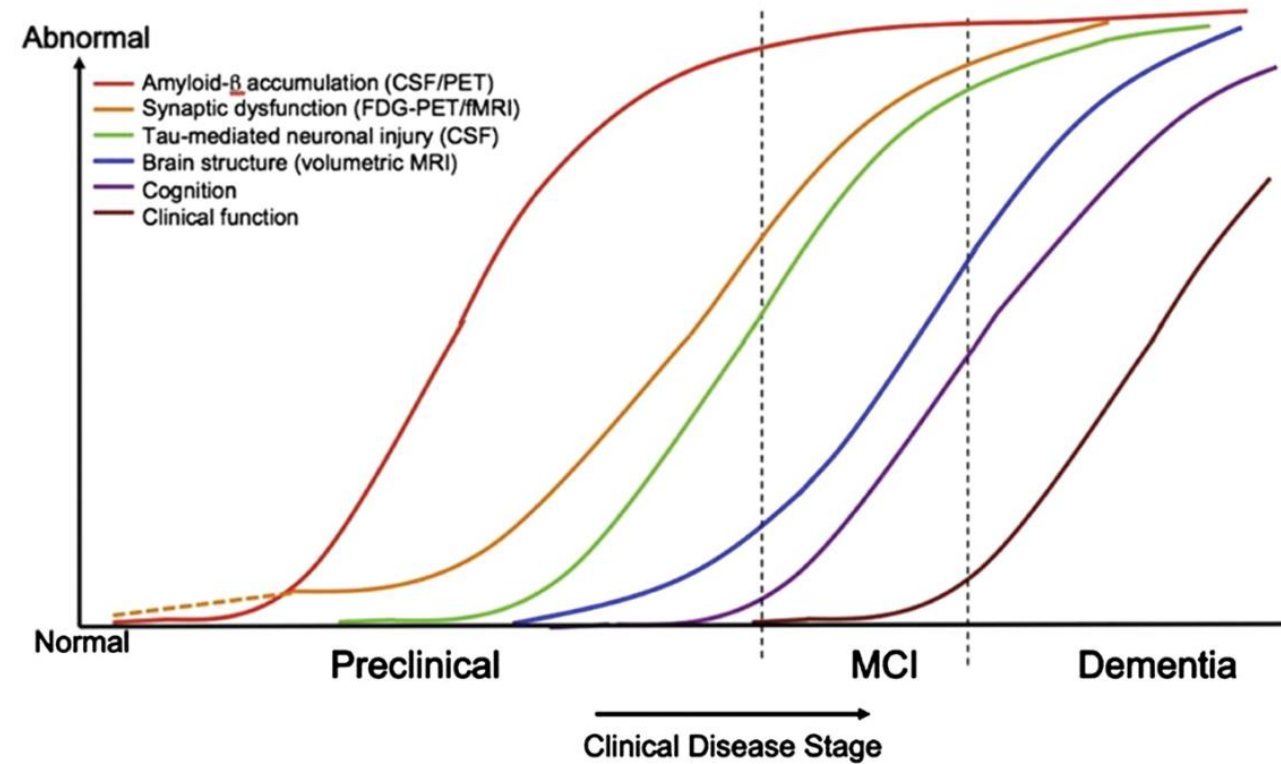
Cognitieve en functionele achteruitgang => dood



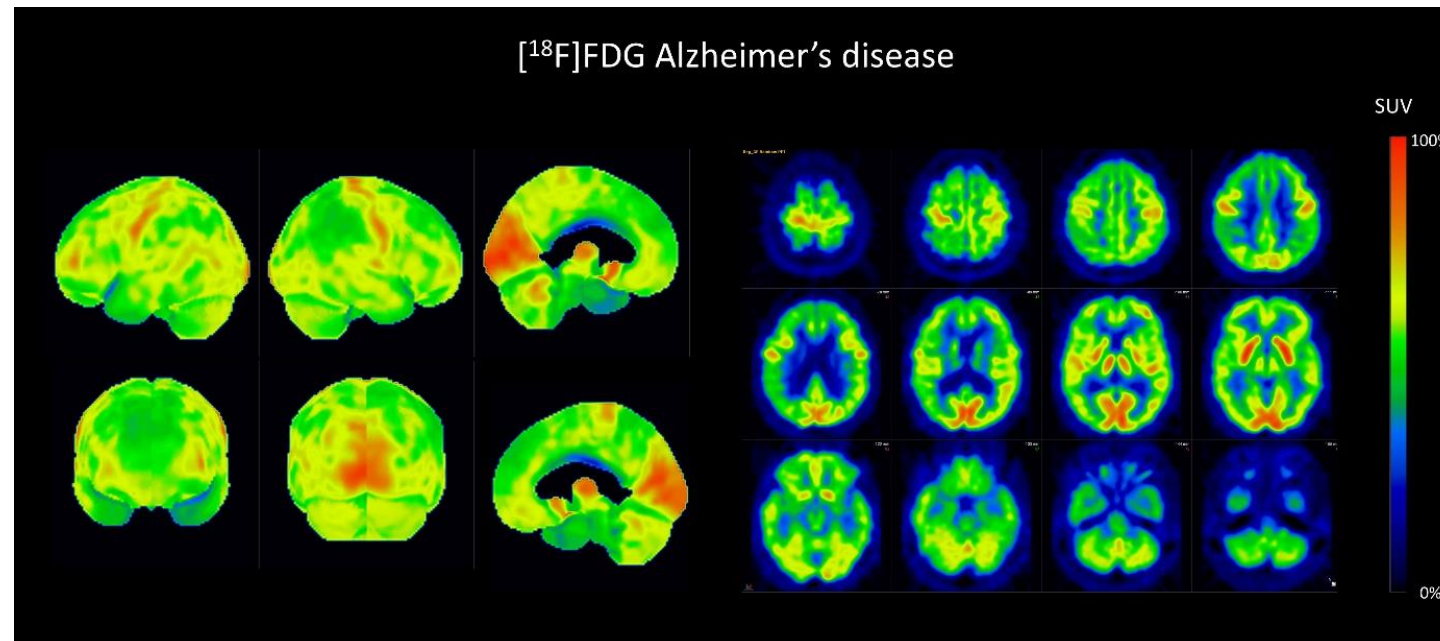
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Foundation**
Cure in Mind. Cure in Sight.

Alzheimer

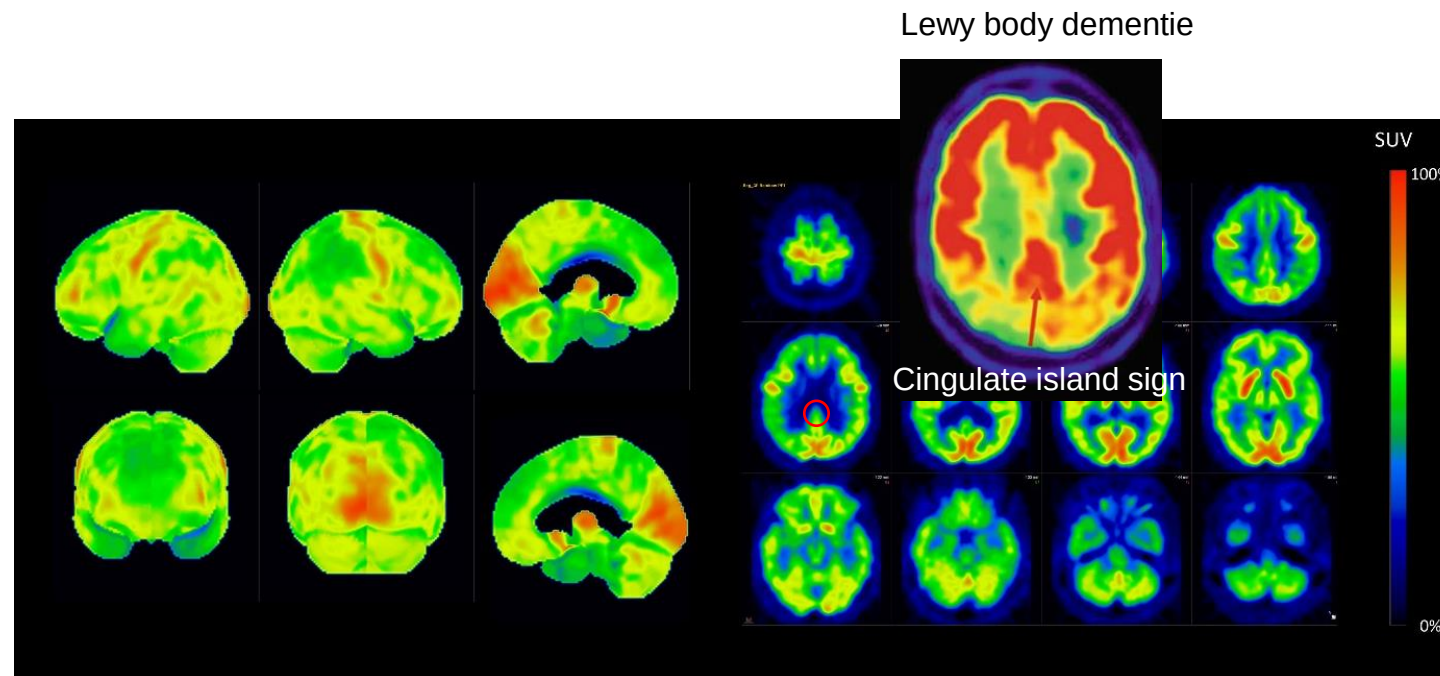


Alzheimer

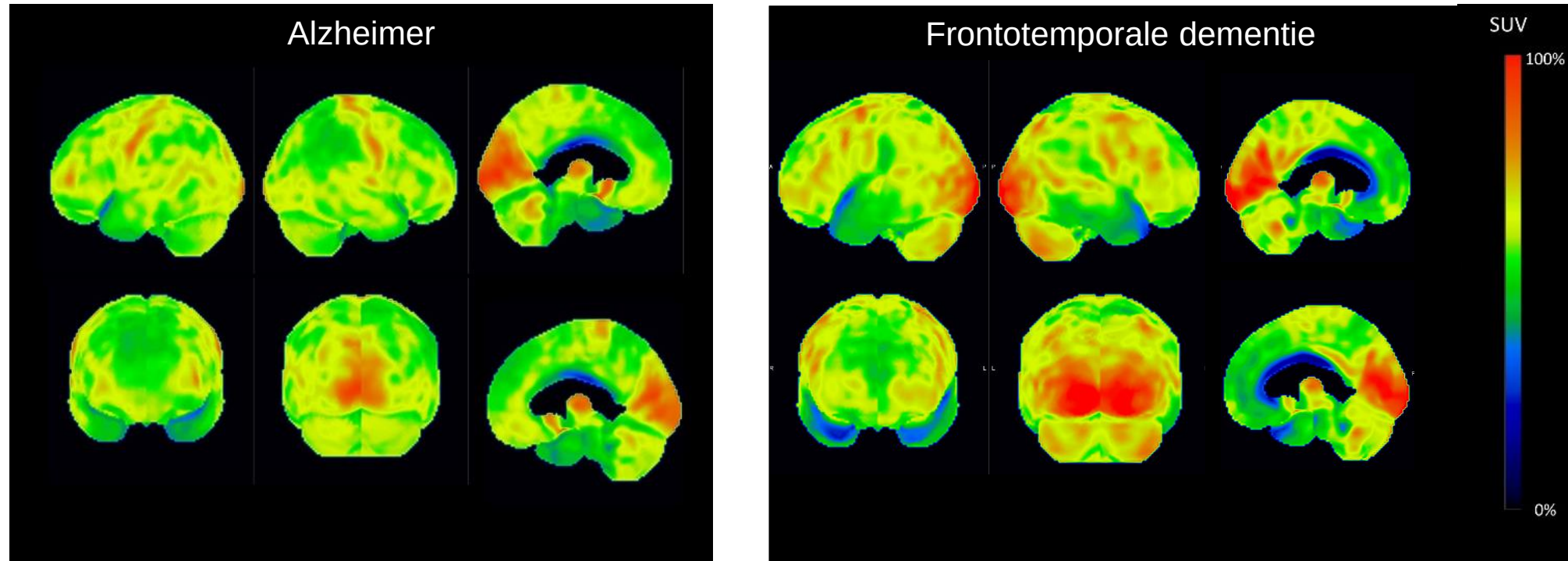


Prognostische en diagnostische waarde

Alzheimer

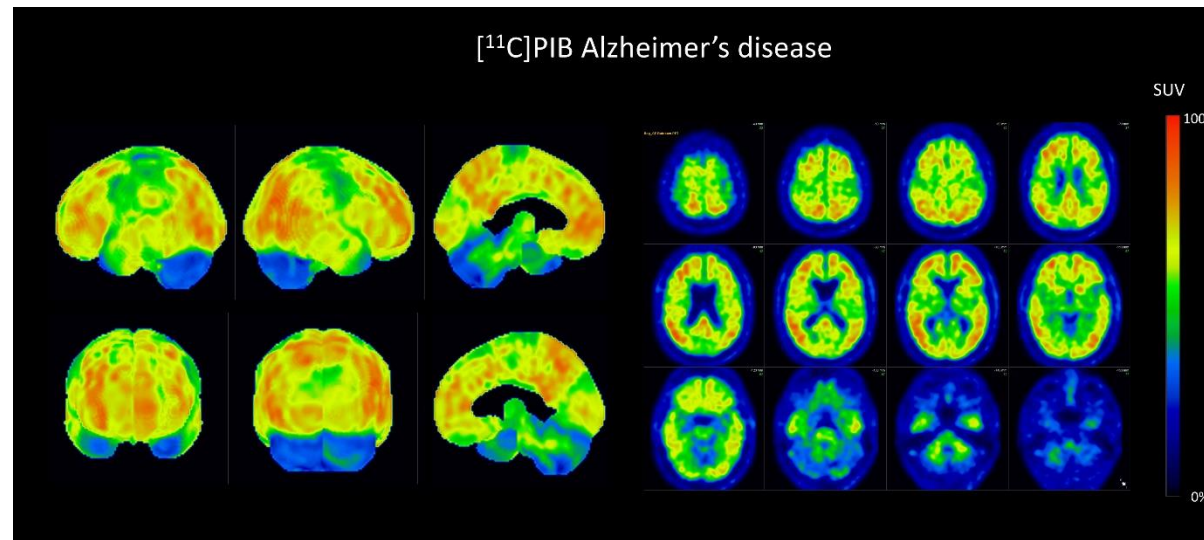


Alzheimer's disease



Accuraatheid 87 - 89%

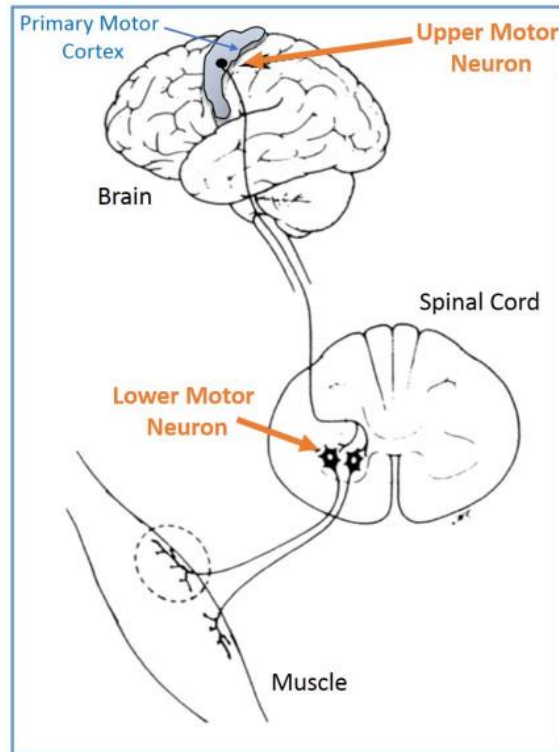
Alzheimer's disease



Amyloid als preclinische marker

Niet specifiek

Amyotrofe laterale sclerose

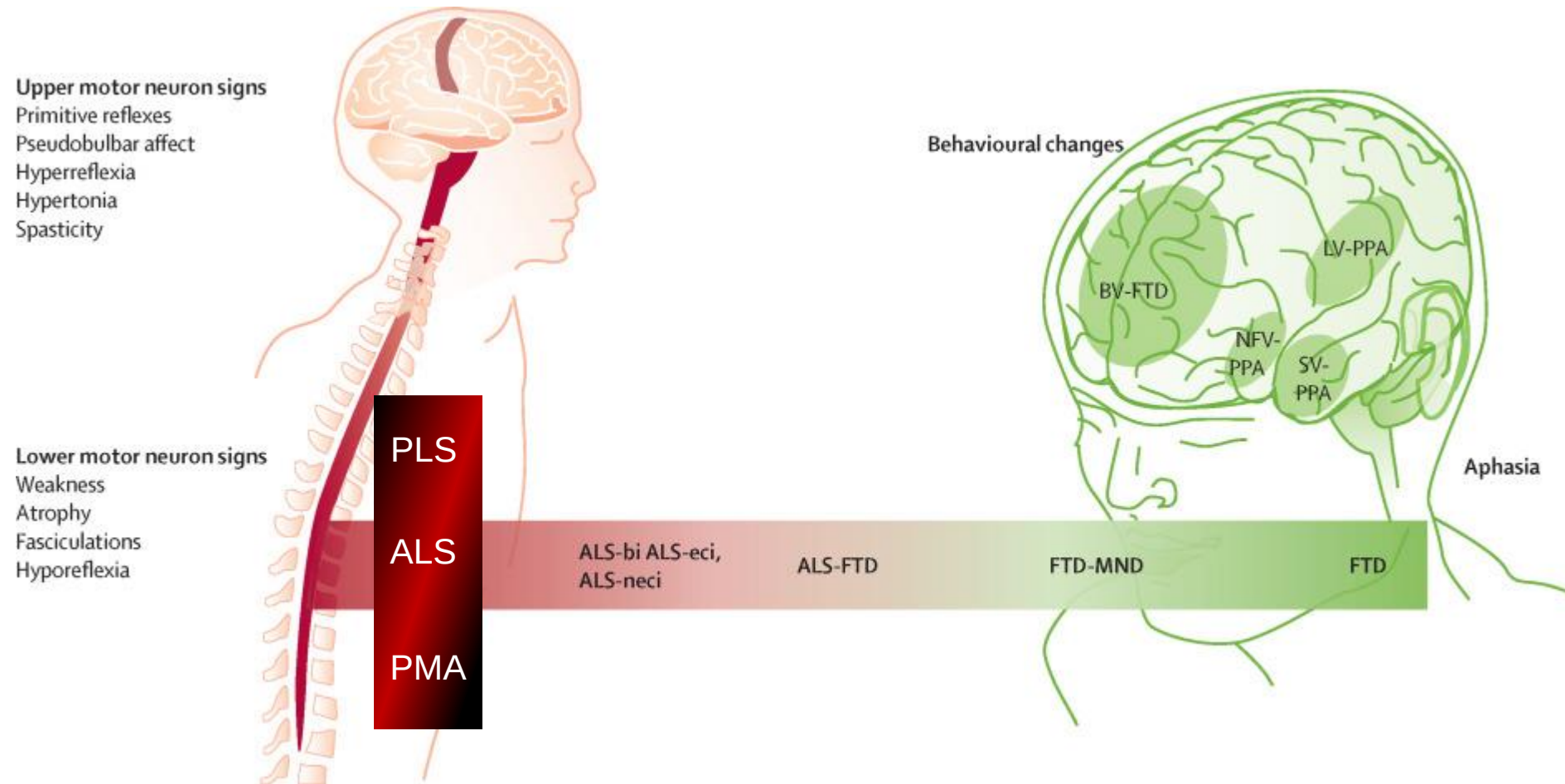


Incidentie: 1-2/100 000 / jaar

Meer frequent bij mannen 1.6 : M/F

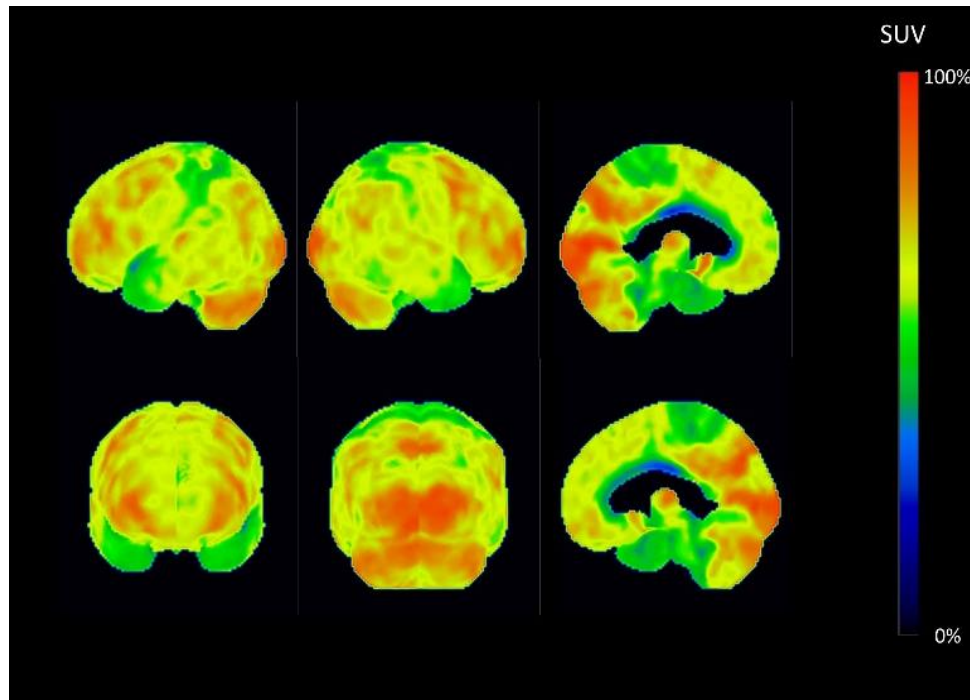
Motor neuron ziekte
met zowel bovenste als onderste motor neuron aantasting

Amyotrofe laterale sclerose

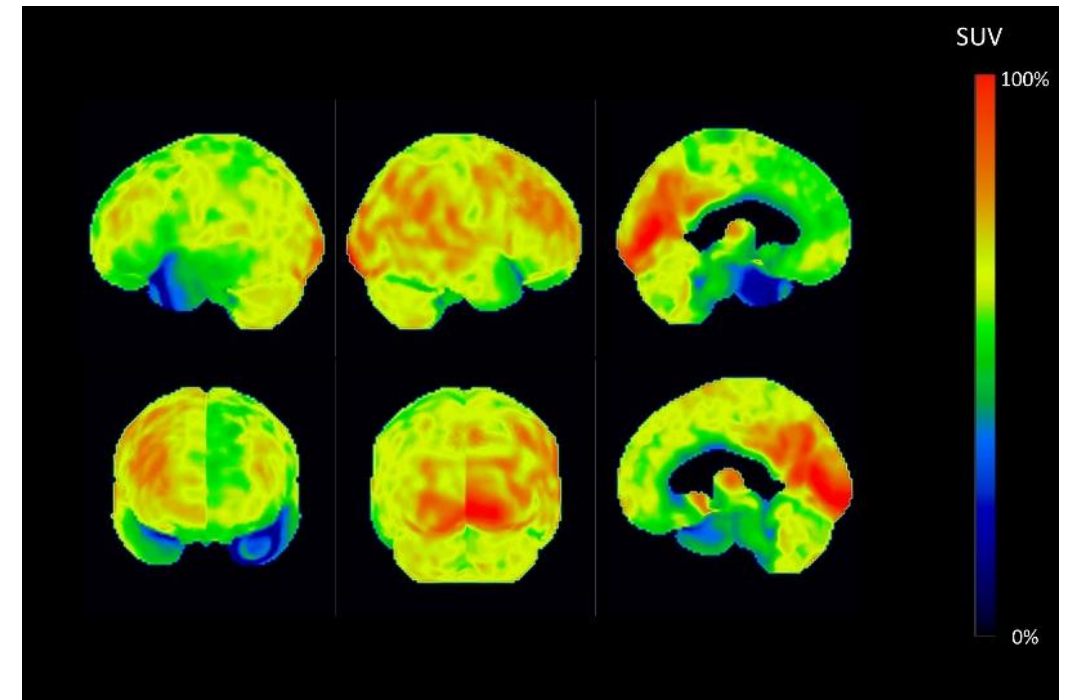


Amyotrophic lateral sclerosis

ALS zonder frontotemporale dementie (FTD)

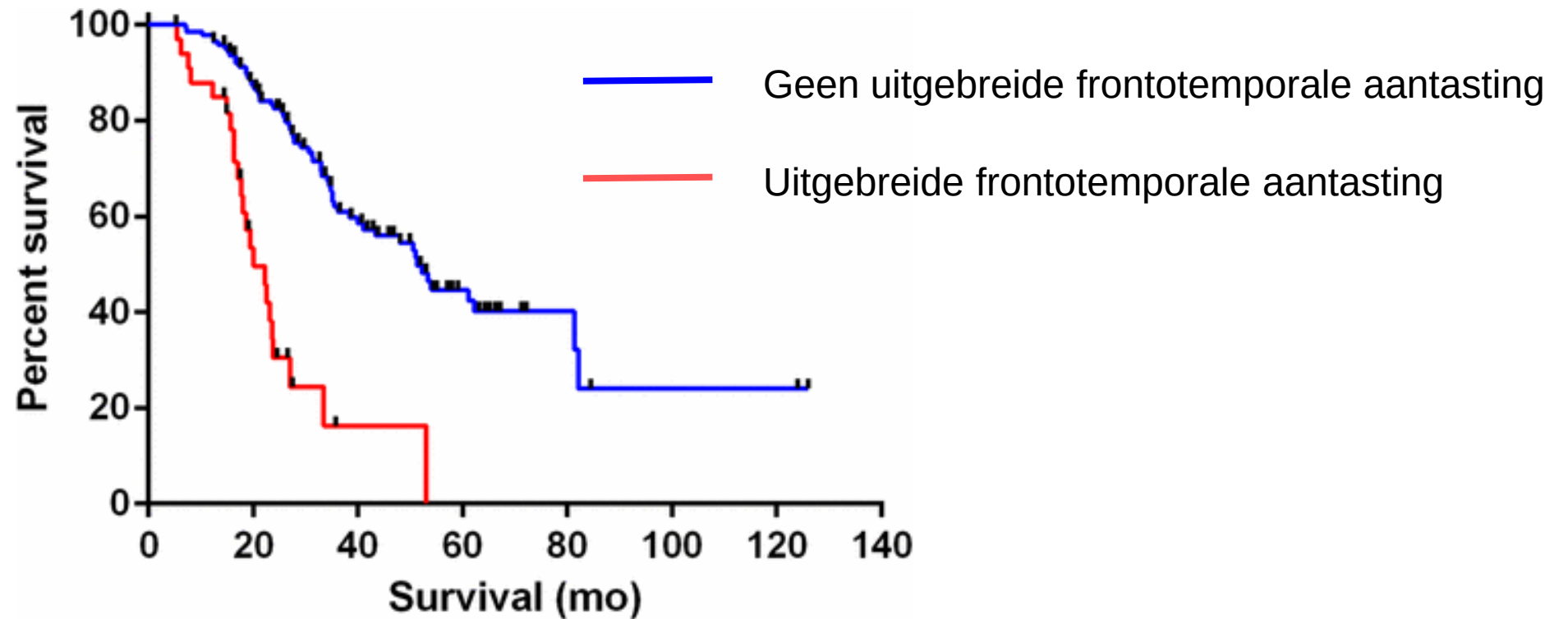


ALS met FTD

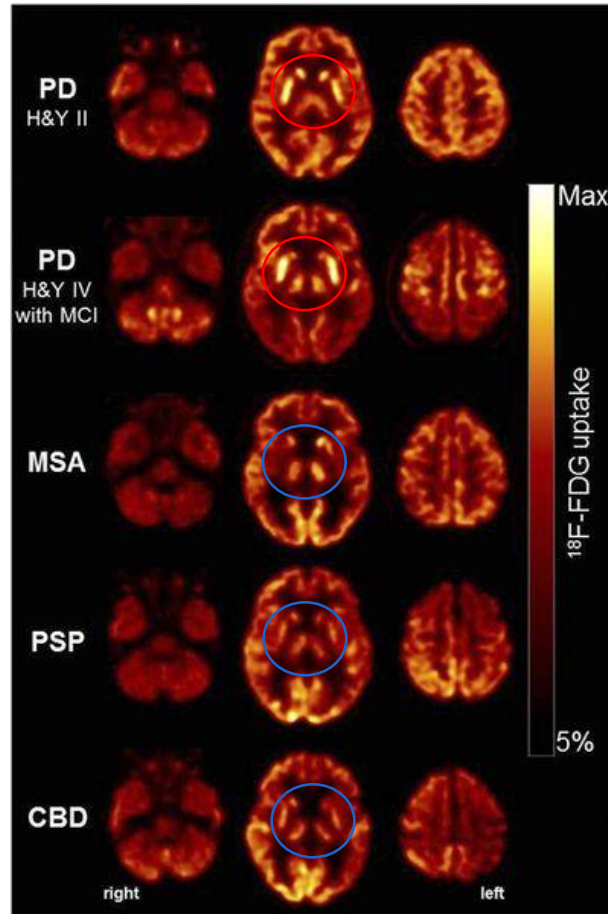
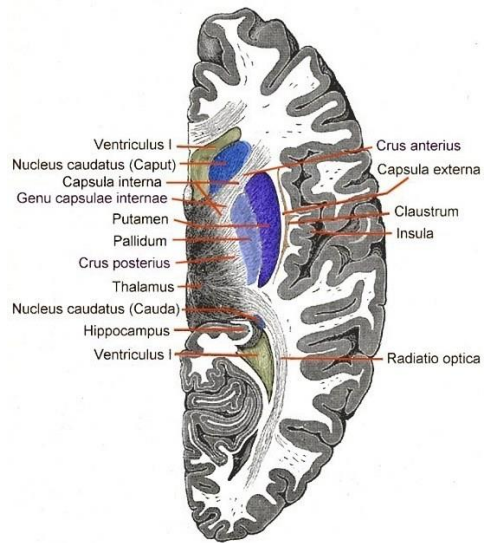


Amyotrofe laterale sclerosis

Prognostische waarde



Parkinsoniaanse syndromen



Parkinson

=>

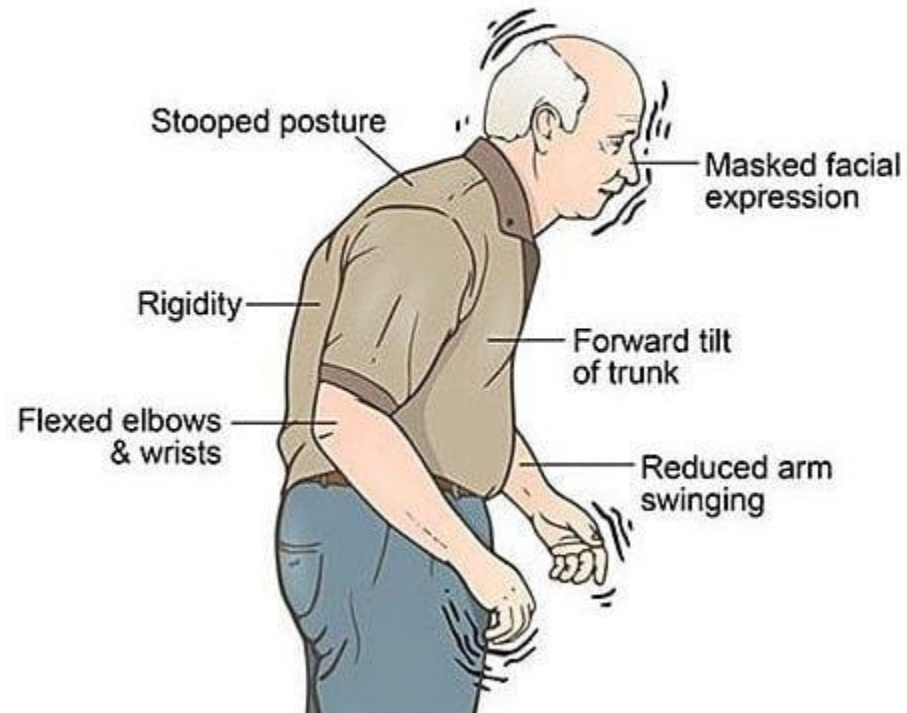
Striataal **hyper**metabolisme

Multipel systeem atrofie
Progressieve supranucleaire palsie
Corticobasale degeneratie =>

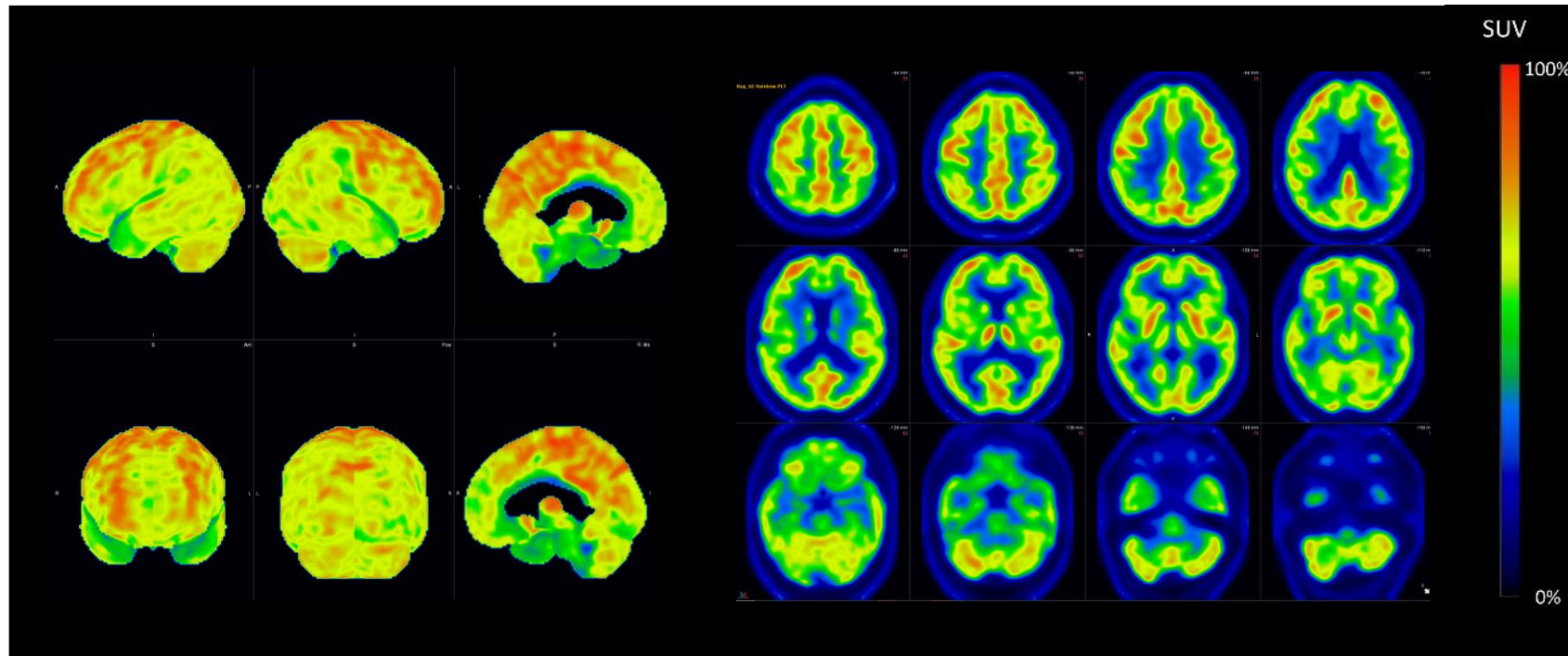
Striataal **hypo**metabolisme

Parkinson

Typical appearance of Parkinson's disease



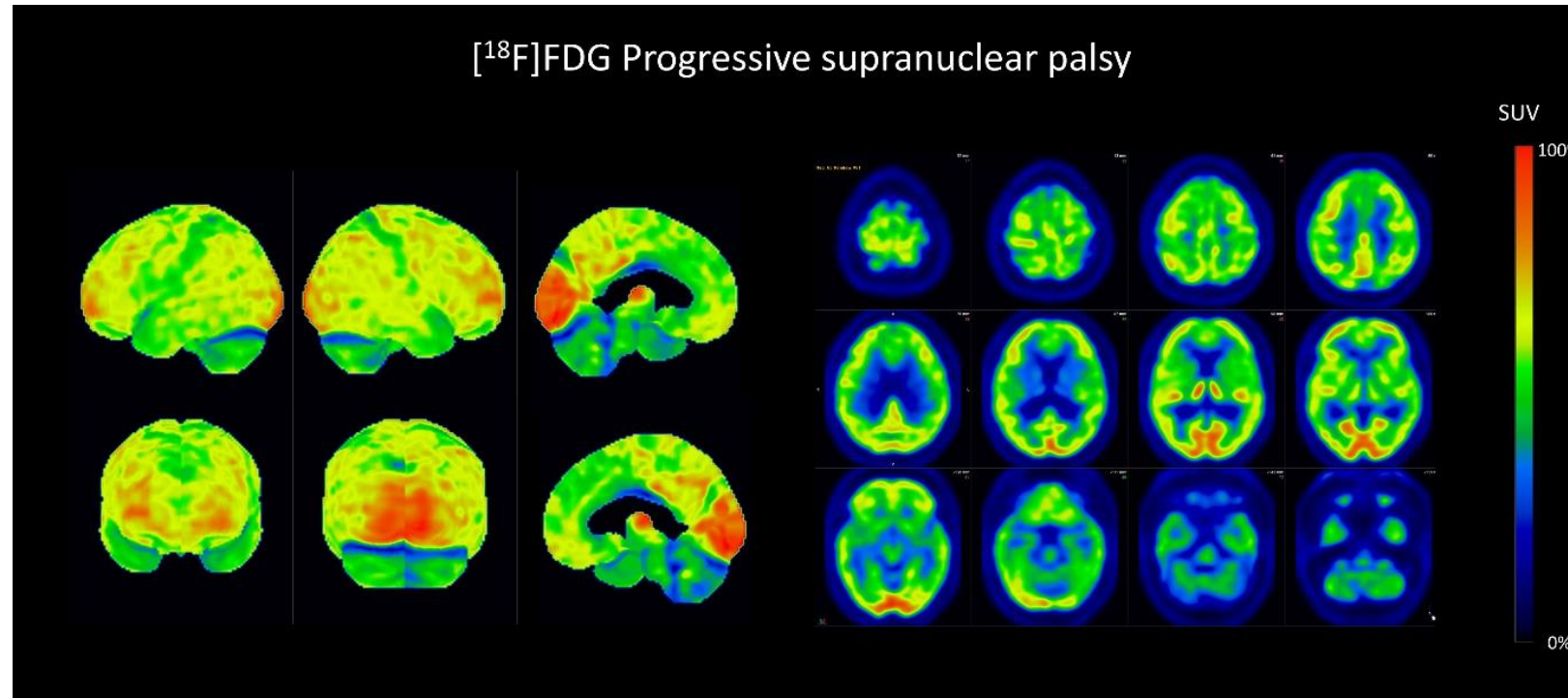
Parkinson met geassocieerde dementie



Progressieve supranucleaire palsie



Progressieve supranucleaire palsy

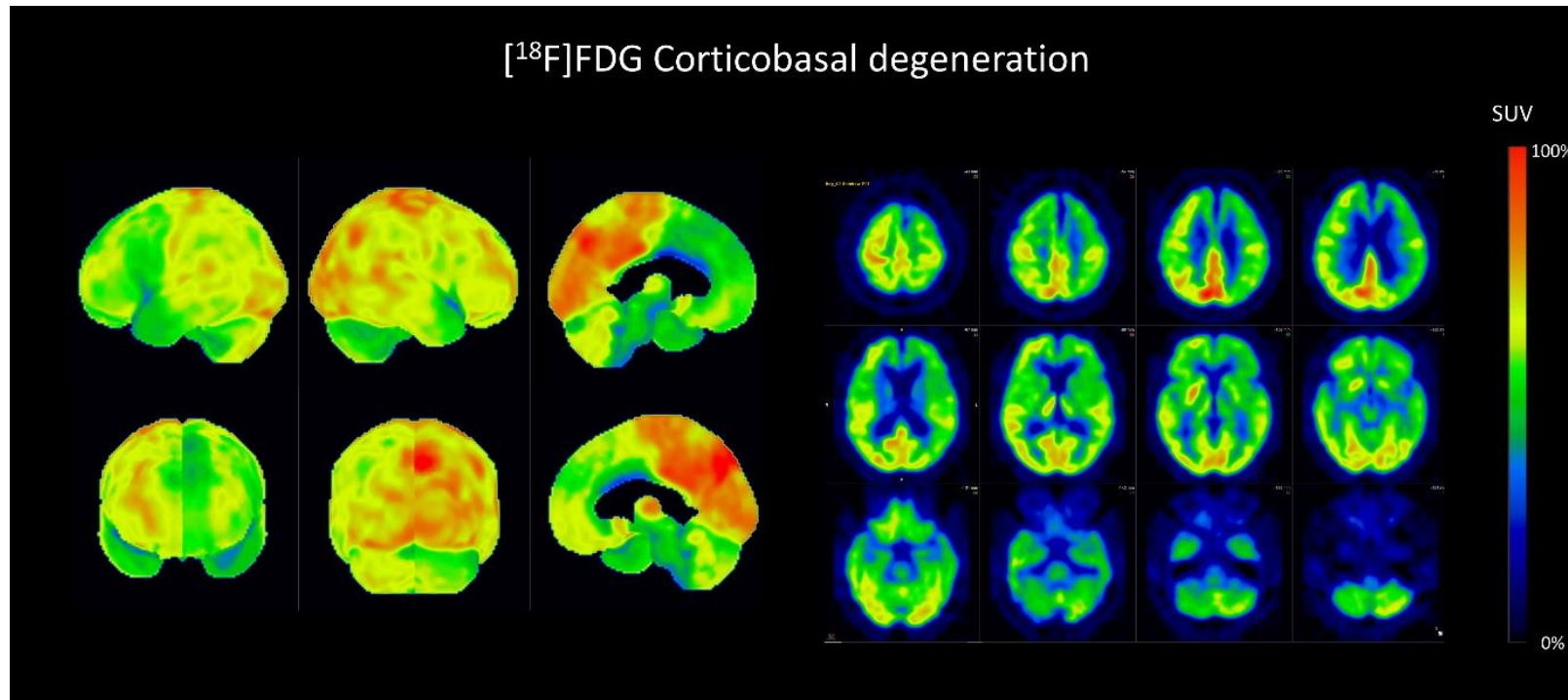


Corticobasale degeneratie (CBD)



- Asymmetrisch
- Spierstijfheid
- Problemen met balans en coördinatie
- Beven en verkramping
- Trage en bemoeilijkte spraak
- Slikmoeilijkheden

Corticobasale degeneratie



Multipel systeem atrofie

MSA cerebellair type



Ataxie



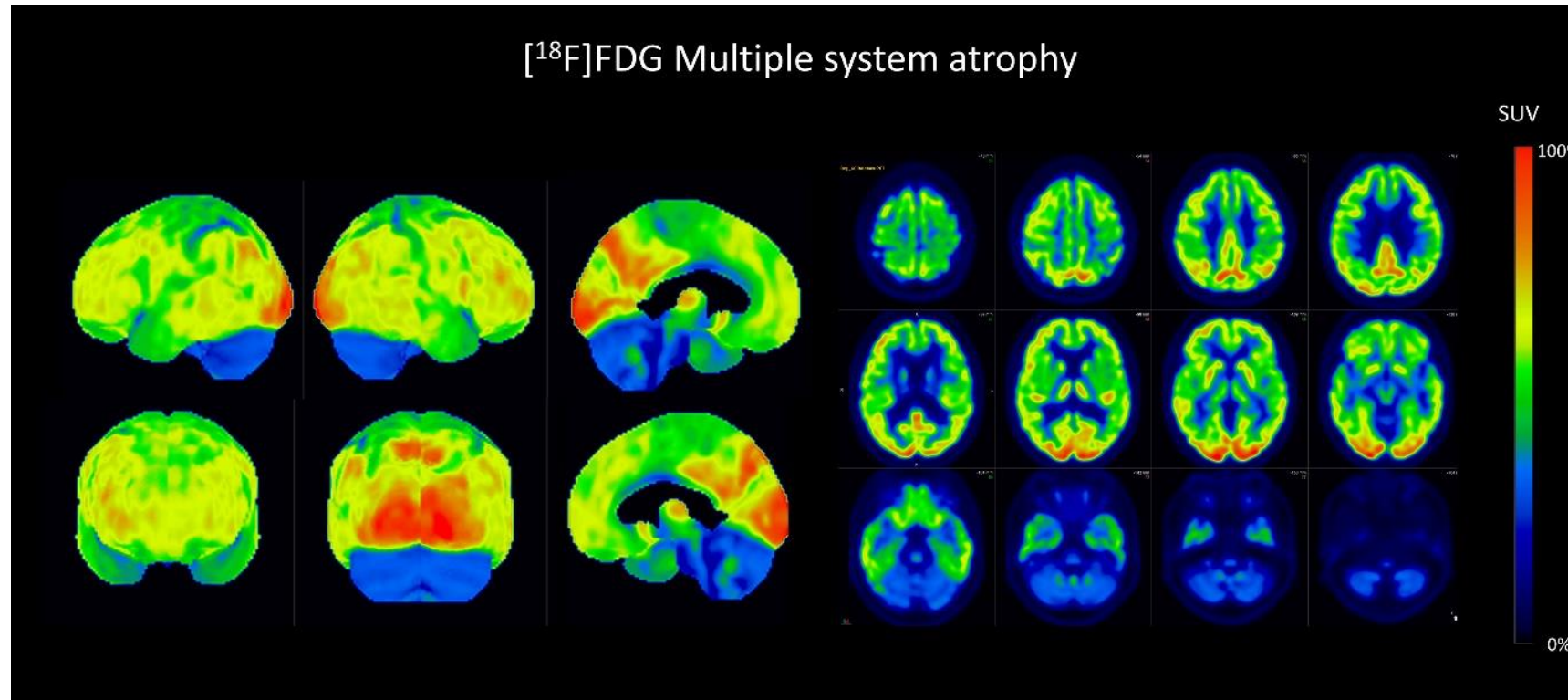
Orthostatische hypotensie

MSA parkinsoniaans type

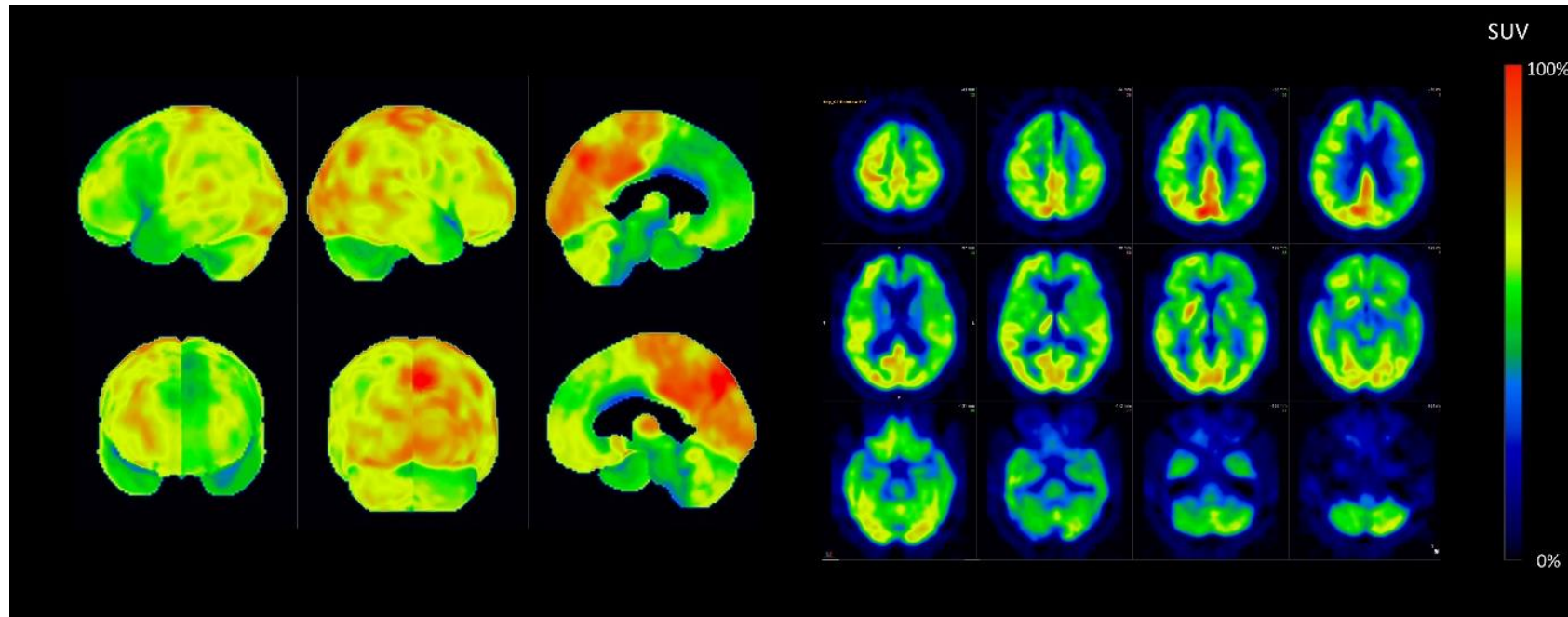


Parkinsonisme

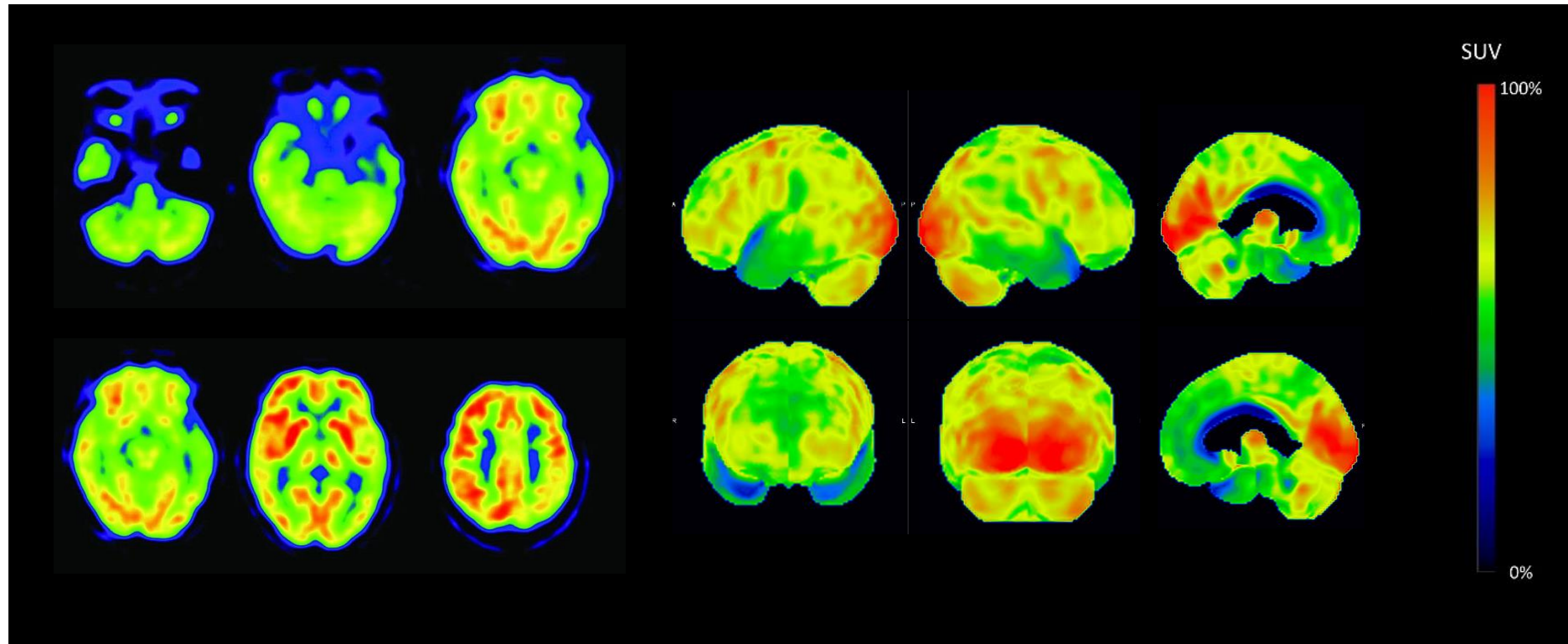
Multipl systeem atrofie



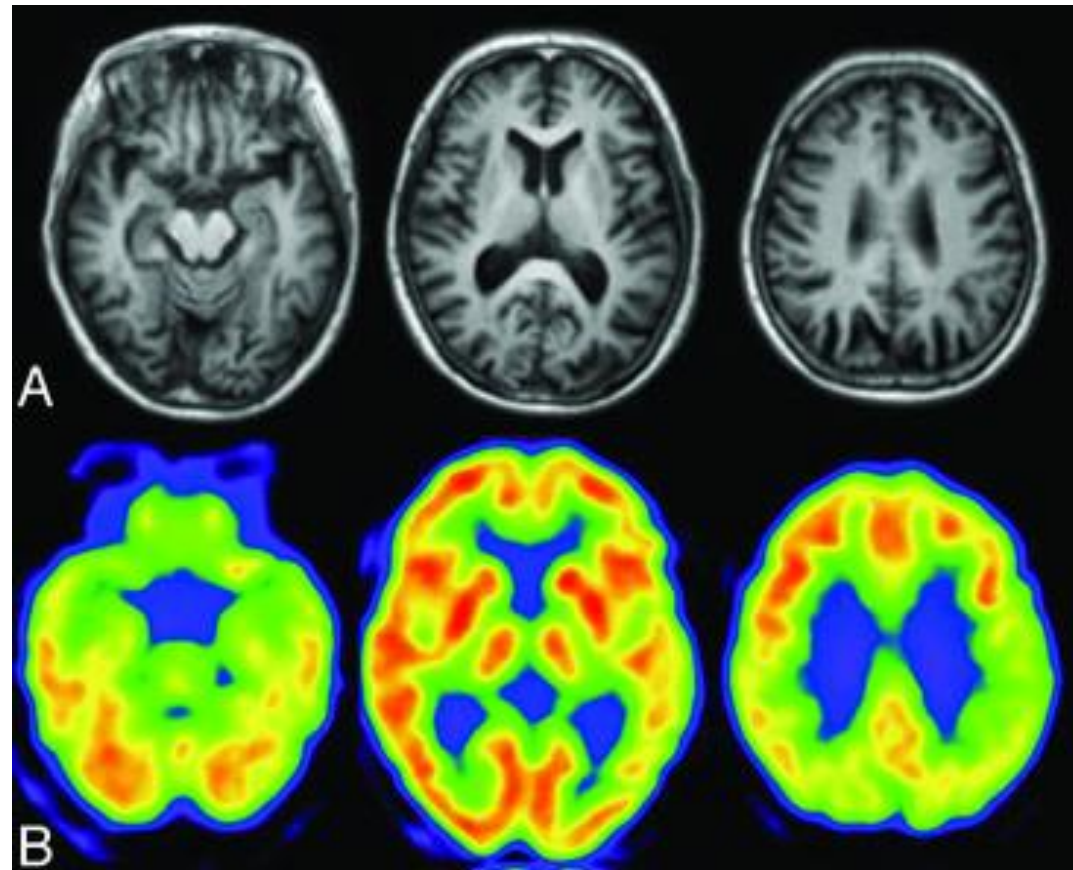
Quiz



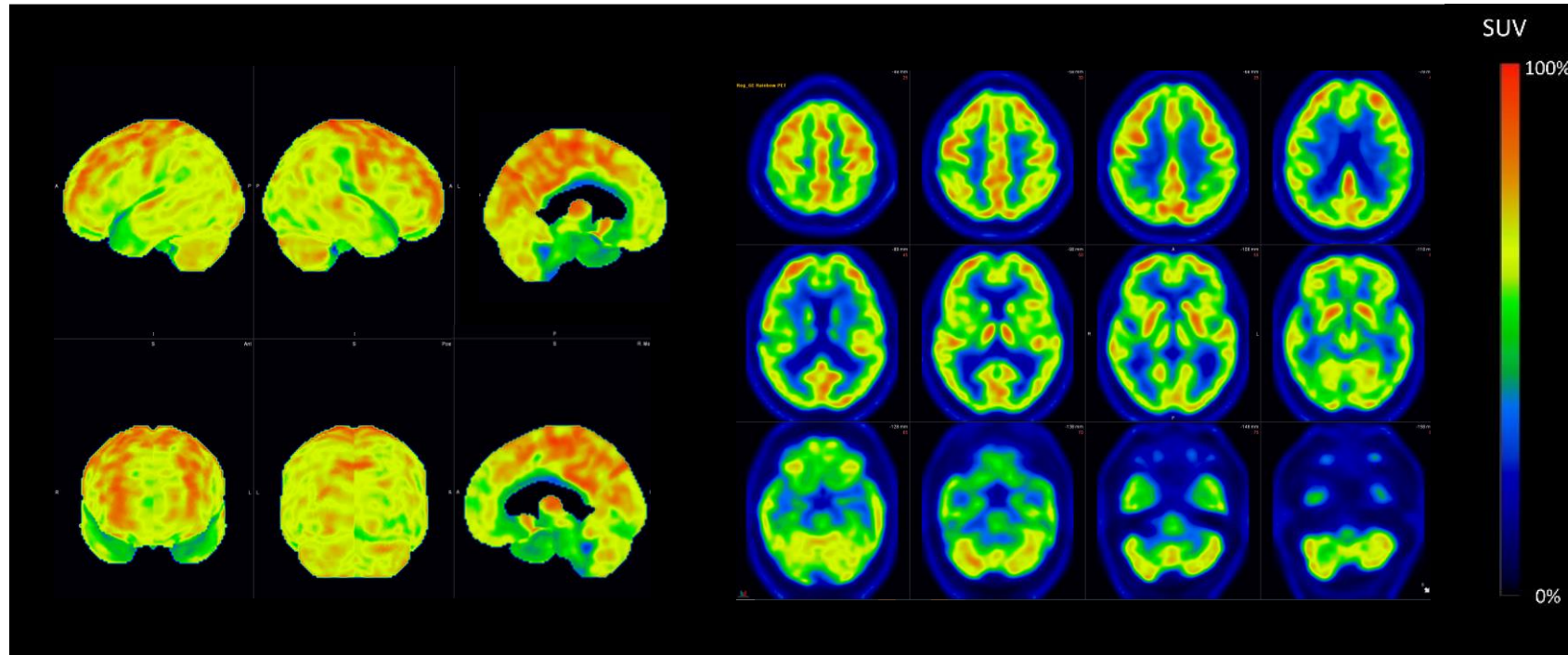
Quiz



Quiz



Quiz





Thank you
Hugobon Adm