
Discrepancies between amyloid PET and CSF in dementia

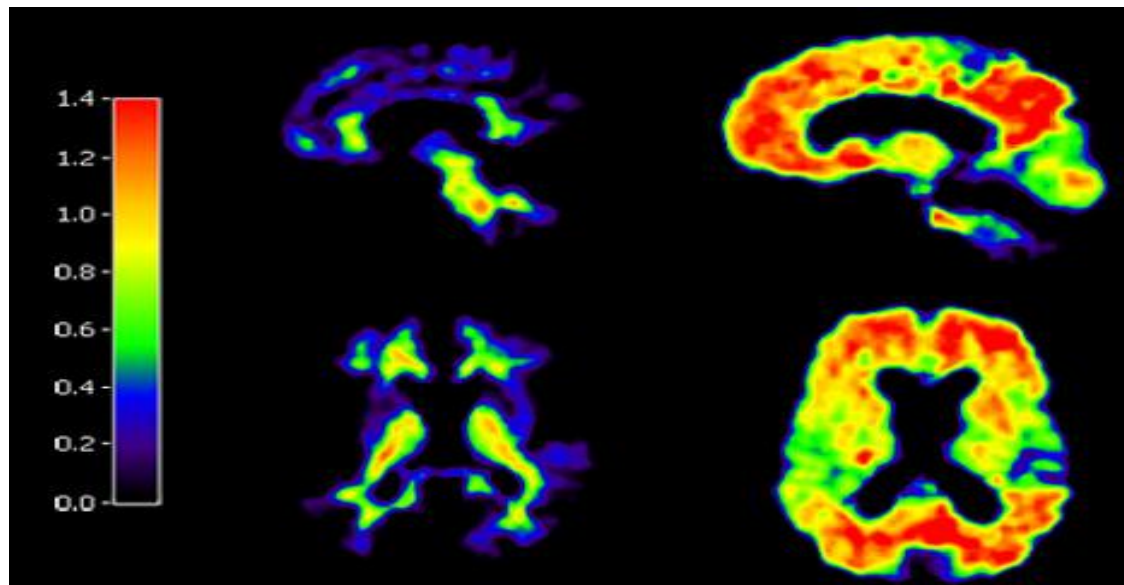
Philip Scheltens
Dept. Neurology & Alzheimer Center
VU University Medical Center
Amsterdam

Disclosures

- The Alzheimer Centre has received funding from:
AEGON NL, ZONMW, EU (KP6, KP7, JPND), Heineken Nederland, KLM Royal Dutch Airlines, Danone research, Stichting Alzheimer Nederland, Kroonenberg Groep, Stichting Dioraphte, AHAF, ISAO.
- Many individual donors through Stichting Vumc fonds
- Clinical trials have been/are carried out with: Nutricia Research Nederland, NeuroChem Inc, Myriad Pharmaceuticals, Medivation, Roche, Lilly, Merck, Janssen AI
- Dr Scheltens and staff receive no personal compensation from any of the above.
- www.alzheimercentrum.nl/fondsenwerving

Concordance Between CSF Biomarkers and [11C]PIB PET in a Memory Clinic Cohort (Submitted)

M.D. Zwan, A.C. van Harten, R. Ossenkoppele, F.H. Bouwman, C.E. Teunissen, S.M. Adriaanse, A.A. Lammertsma, Ph. Scheltens, B.N.M. van Berckel, W.M. van der Flier.



Subjects

	Controls	MCI	AD	Non-AD
N	16	22	64	34
Age, years	61±7	64±9	63±7	64±8
Gender, f	8 (50%)	8 (37%)	24 (38%)	8 (31%)
MMSE	28±2	28±2	23±5^{a,b}	24±4^{a,b}
CSF Aβ42	809±284	750±325	488±158^{a,b,c}	827±219
CSF tau	291±168	422±230	624±408^{a,b,c}	329±159
% positive [¹¹C]PIB PET	3 (19%)	10 (45%)^{a,c,d}	56 (88%)^{a,b,c}	4 (12%)
% abnormal CSF Aβ42	4 (25%)	7 (32%)	50 (78%)^{a,b,c}	4 (12%)
% abnormal CSF profile	4 (25%)	11 (50%)	59 (92%)^{a,b,c}	6 (18%)

Concordance

[¹¹C]PIB PET	All	Controls	MCI	AD	Non-AD
CSF Aβ42 <550	84%	81%	77%	81%	94%
CSF Aβ42 <640	90%	75%	95%	92%	91%
CSF profile	89%	81%	86%	94%	88%

Discordance in AD (PET NEG)

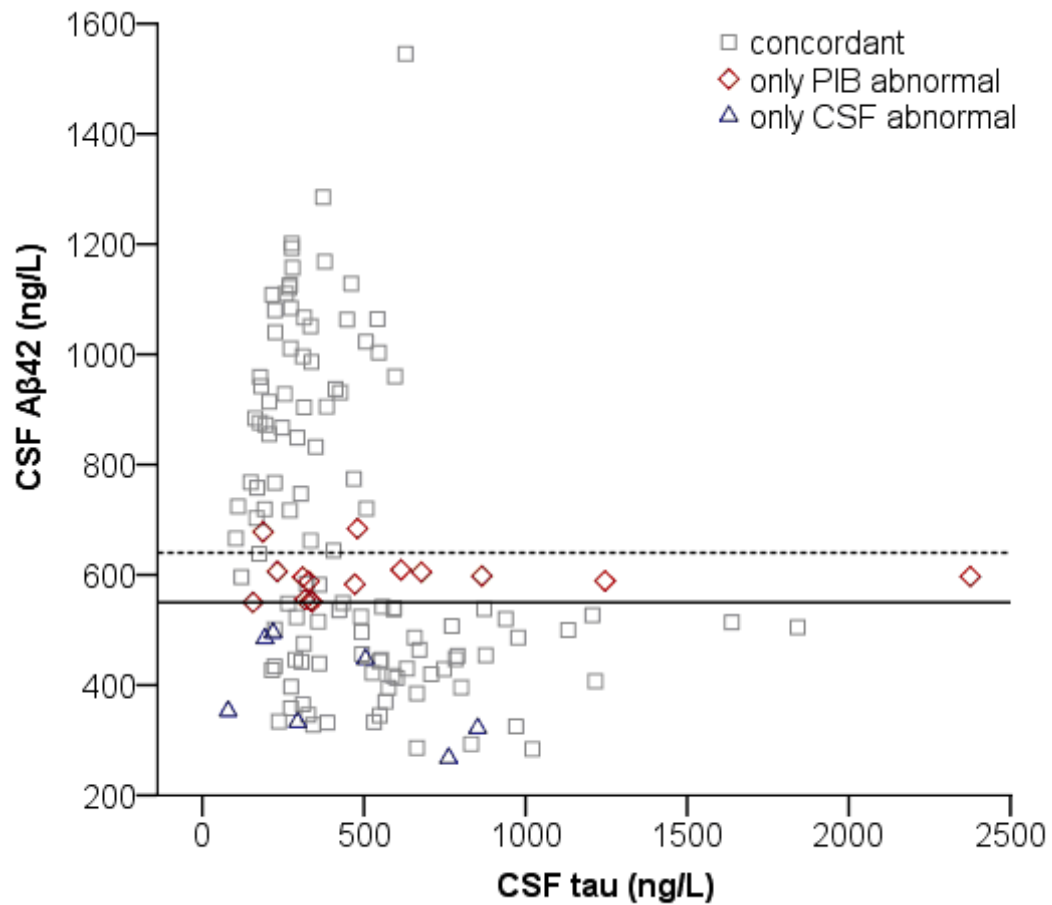
Diagnosis	Sex	Age	MMSE	PET		CSF	
				[¹¹ C]PIB	Aβ42<550	Aβ42<640	profile
AD	f	62	27	-	+	+	+
AD	m	50	24	-	+	+	+
AD	m	68	20	-	+	+	+
AD	m	65	25	-	-	+	+

Discordance in AD (PET-POS)

Diagnosis	Sex	Age	MMSE	PET		CSF	
				[¹¹ C]PIB	Aβ42<550	Aβ42<640	profile
AD	f	75	26	+	-	+	+
AD	f	68	21	+	-	-	+
AD	m	56	16	+	-	+	+
AD	m	78	27	+	-	+	+
AD	m	70	24	+	-	+	+
AD	m	64	13	+	-	+	+
AD	m	63	29	+	-	+	+
AD	m	52	18	+	-	+	+
AD	m	65	23	+	-	+	+
AD	m	54	25	+	+	+	-

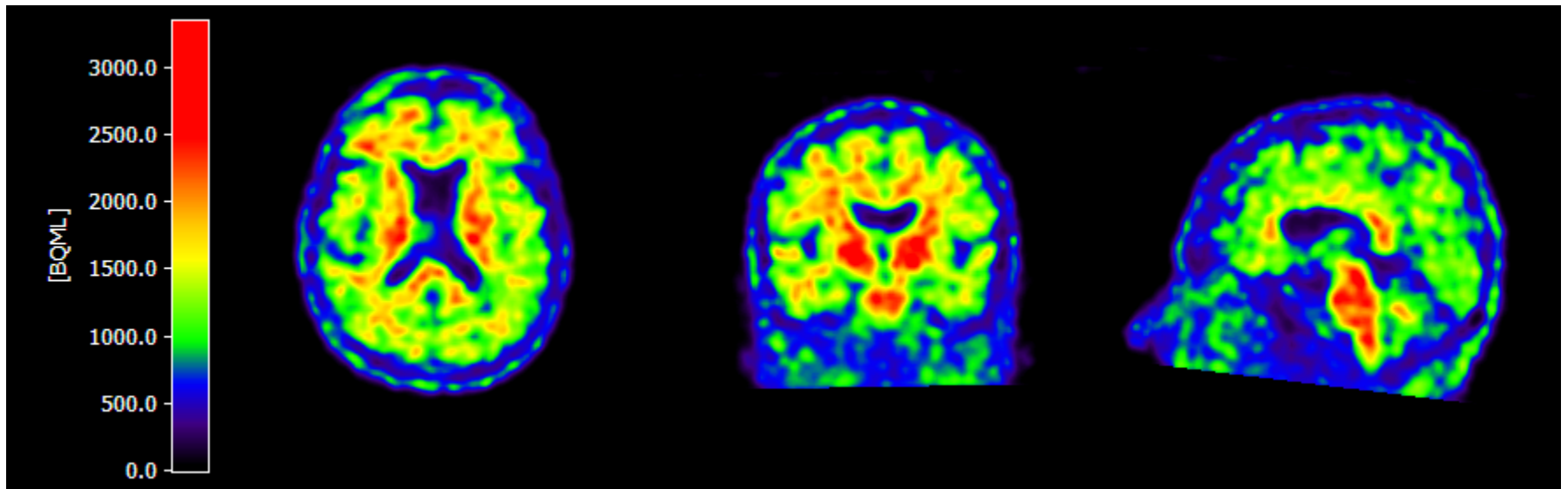
Discordance in MCI

Diagnosis	Sex	Age	MMSE	PET		CSF	
				[¹¹ C]PIB	Aβ42<550	Aβ42<640	profile
MCI	f	63	28	+	-	+	+
MCI	f	65	29	+	-	+	+
MCI	m	58	27	+	-	+	+
MCI	m	73	28	+	-	+	-
MCI	f	66	27	-	-	-	+
MCI	m	51	28	-	+	+	+



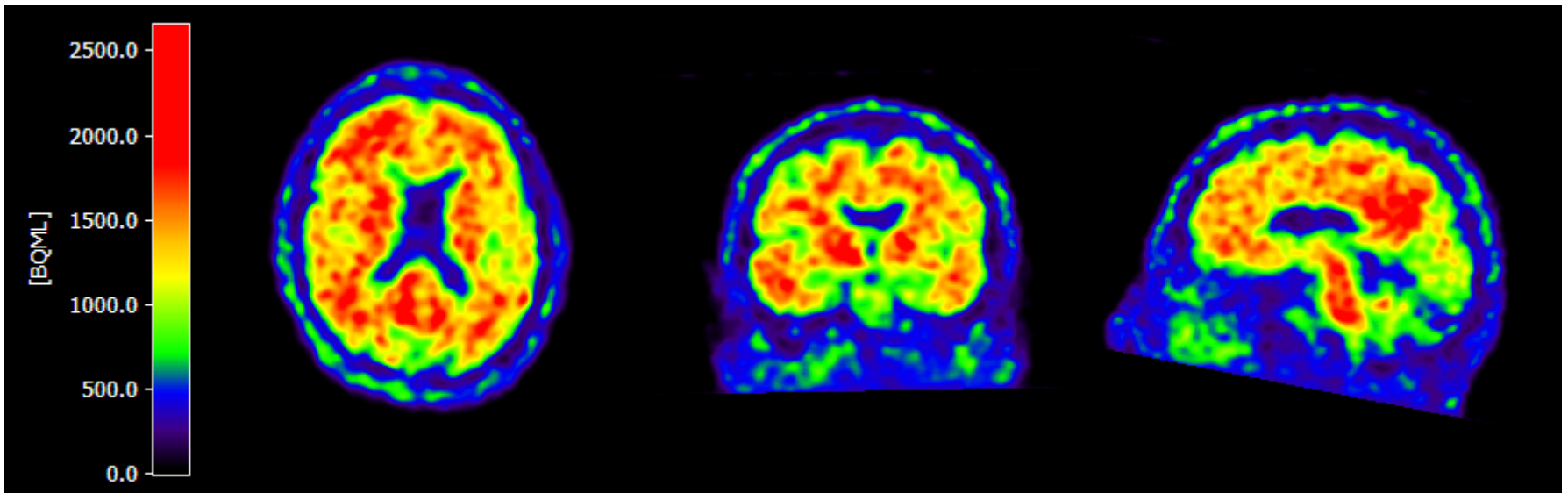
CSF abnormal

- Abeta 473 (550)
- Total tau
- P-tau

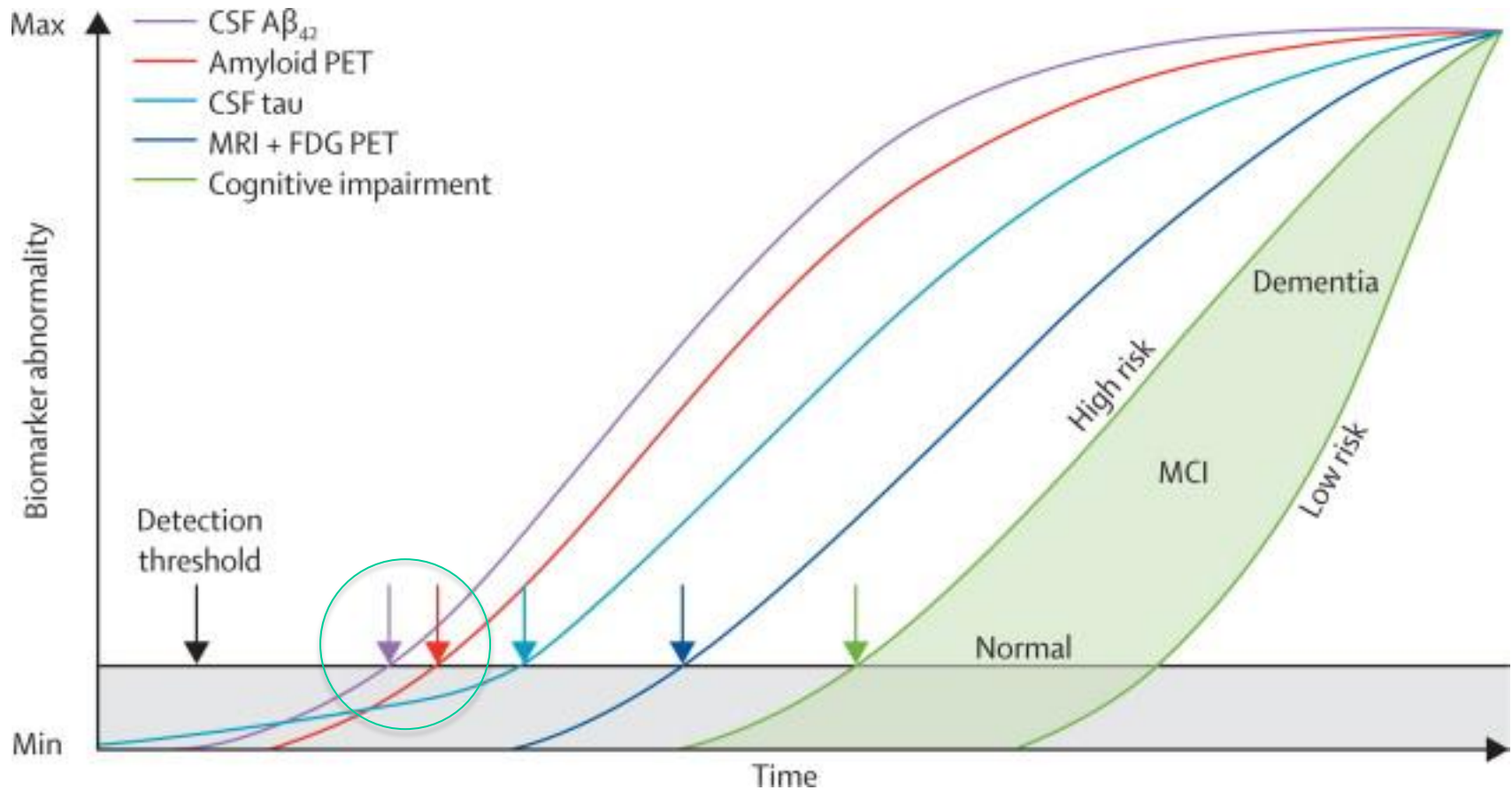


CSF normal

- Abeta 799 and 894 (> 550)
- Tau 378 and 340 (< 430)
- P-tau



Possible explanations



Possible explanations

- CSF earlier abnormal than amyloid PET (cf Jack) (rather the opposite in our study)
- CSF abeta less reliable/variable; depending on cut off (shown in data)
- Genetic cases (arctic mutation): no evidence in this study
- Discordance more often in cases with CSF around cut off
- In non-AD cases possibility of misdiagnosis

Conclusions

- Overall high concordance
- Can be used interchangeably
- More discordance in cases with positive PET scans/negative CSF
- Caution in cases around cut off CSF