



HỘI NGHỊ KHOA HỌC CHẨN ĐOÁN HÌNH ẢNH TP.HCM MỞ RỘNG LẦN THỨ XII-2025

Phiên CME thần kinh

Các kỹ thuật CHT trong chẩn đoán sa sút trí tuệ

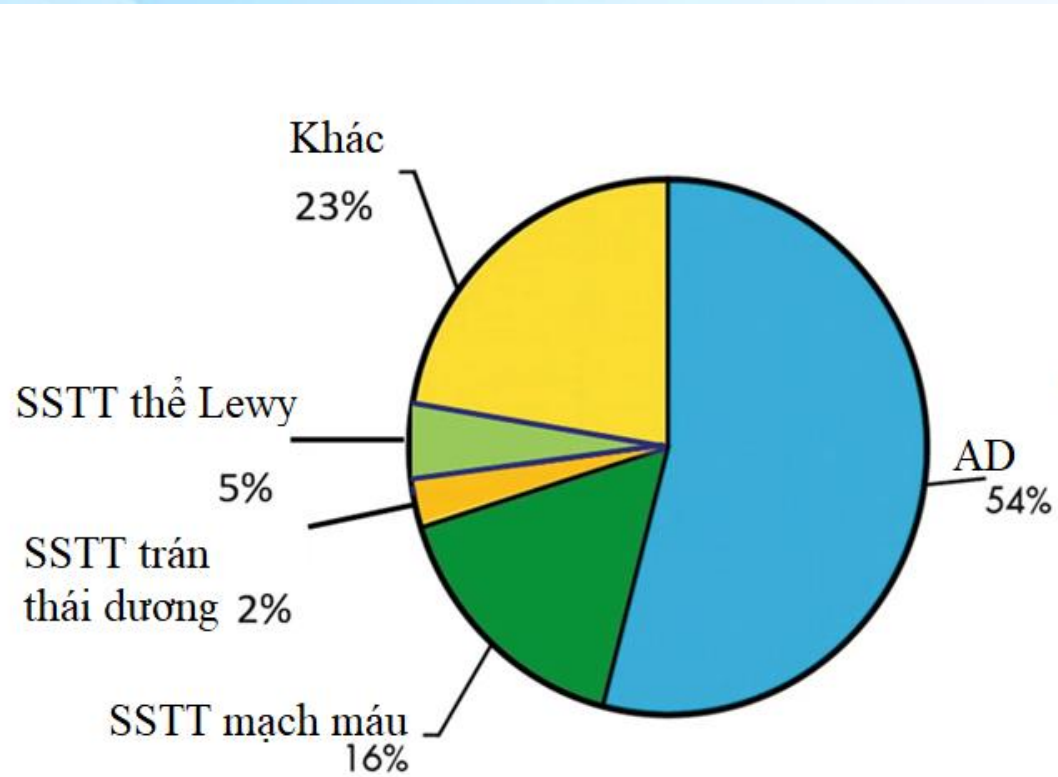


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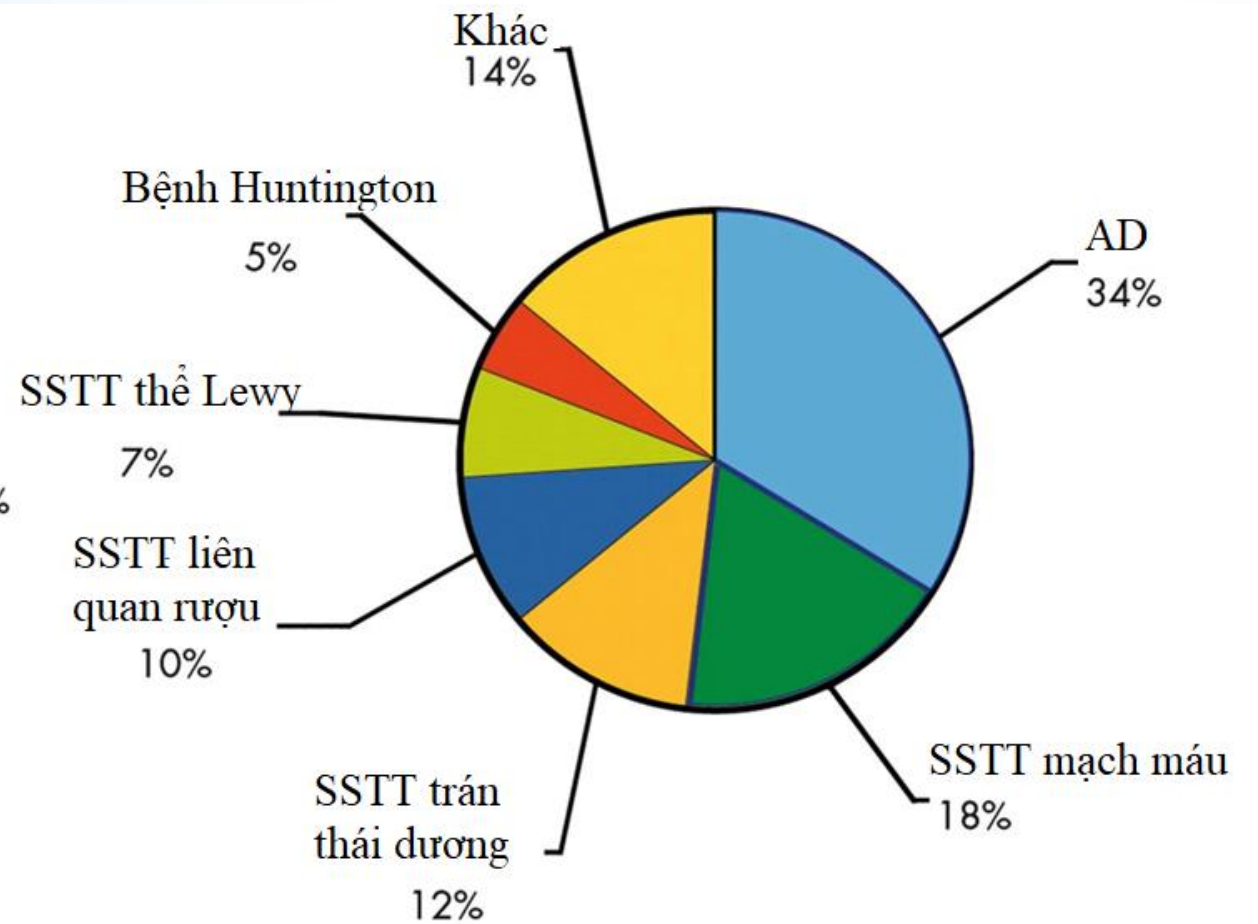
Mục tiêu

Sau buổi học này, người tham gia có thể:

- Trình bày được các kỹ thuật hình ảnh cộng hưởng từ (CHT) trong chẩn đoán sa sút trí tuệ
- Phân tích vai trò của từng chuỗi xung CHT trong hội chứng sa sút trí tuệ.
- Nhận thức rõ tầm quan trọng của tiếp cận đa chuyên khoa trong chẩn đoán và điều trị sớm bệnh nhân suy giảm nhận thức

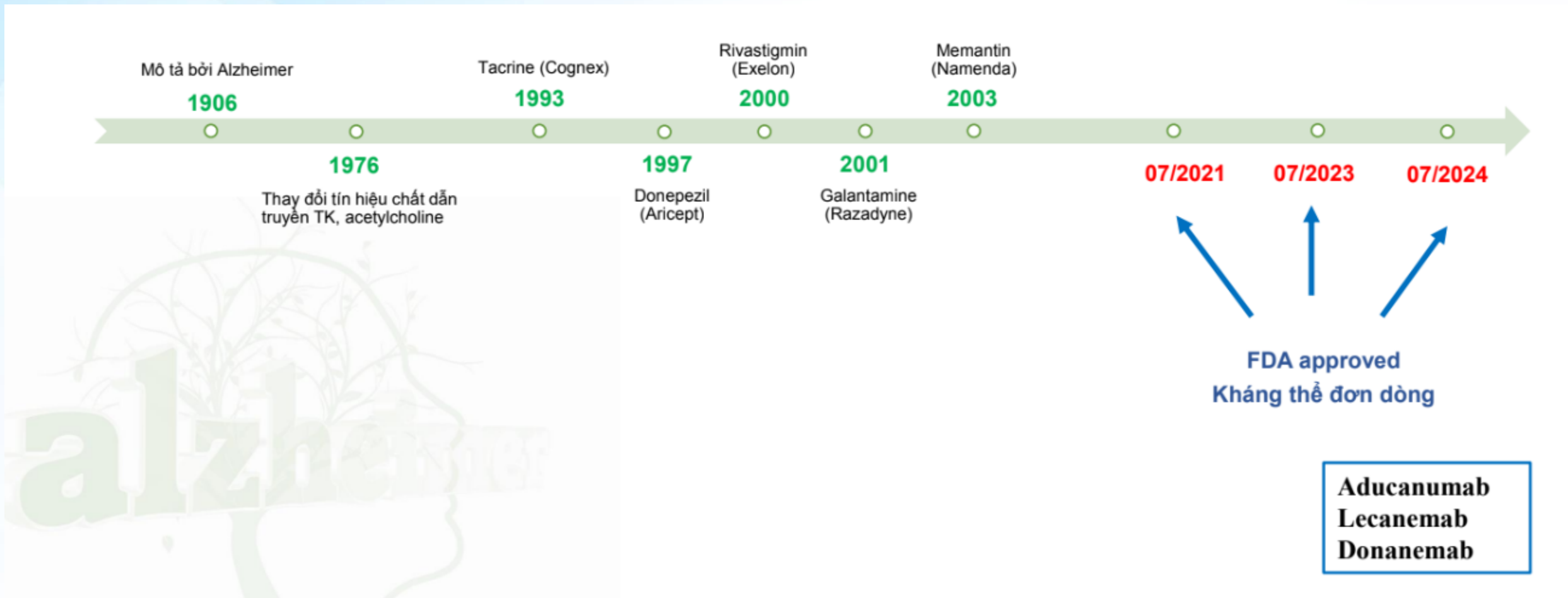


≥ 65



< 65

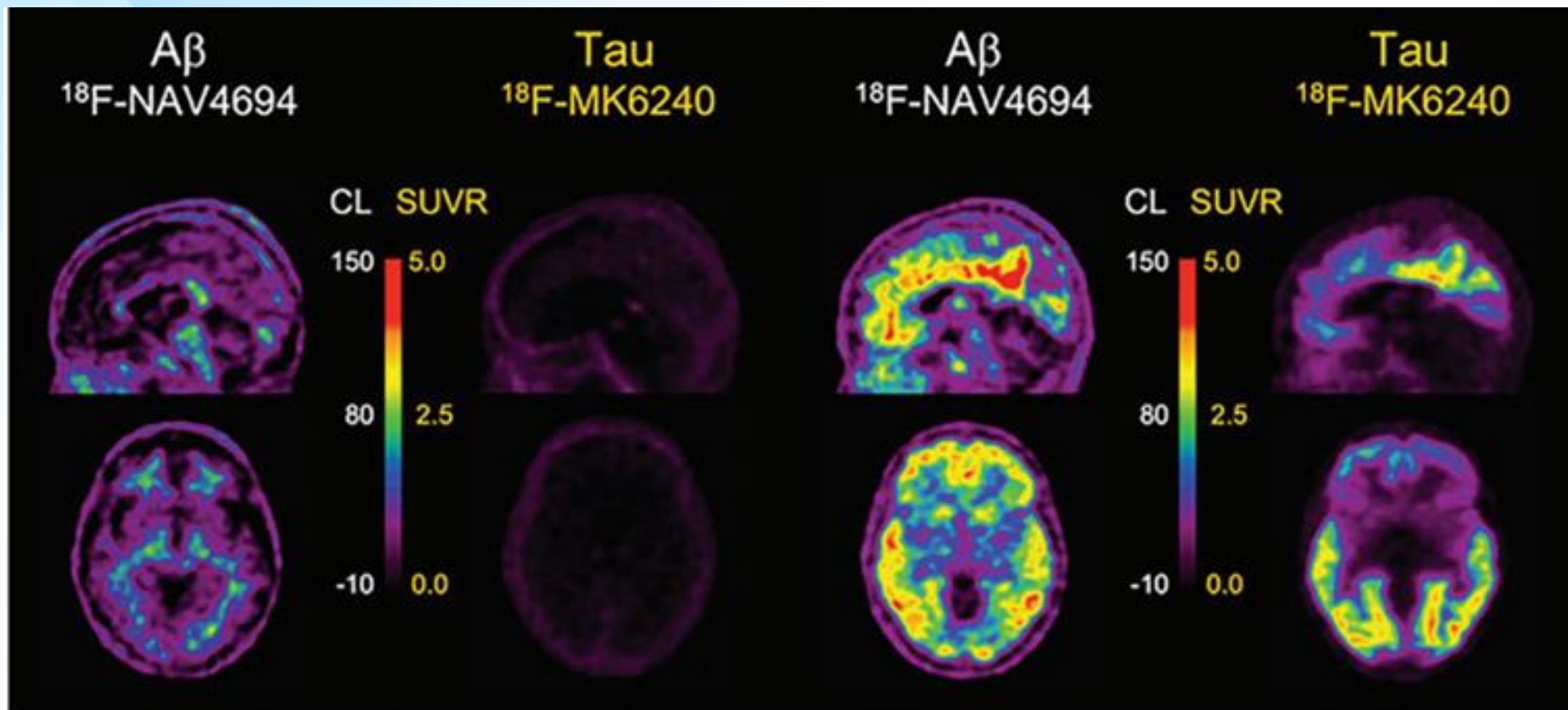
Dòng thời gian



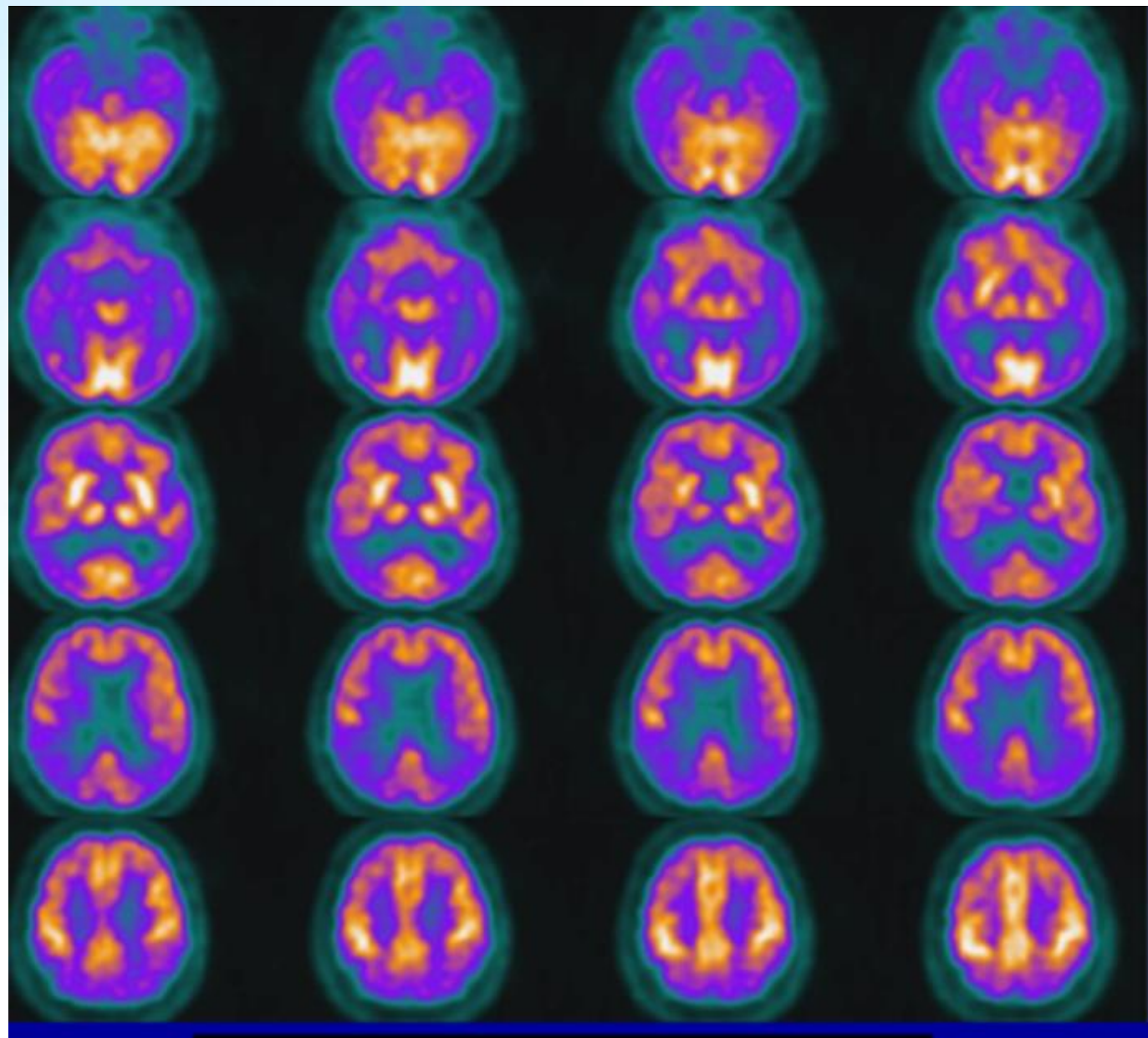
Alzheimer (AD)

A-T-N

- “A” đề cập đến amyloid – hình ảnh amyloid PET và nồng độ β -amyloid ($A\beta$) trong dịch não tủy
- “T” đề cập đến tăng phosphorylated-tau (P-tau) trong dịch não tủy và hình ảnh tau PET.
- “N” - thoái hóa thần kinh đề cập đến tăng tau toàn phần (T-tau) trong dịch não tủy, giảm chuyển hóa FDG-PET và teo cấu trúc não trên CHT



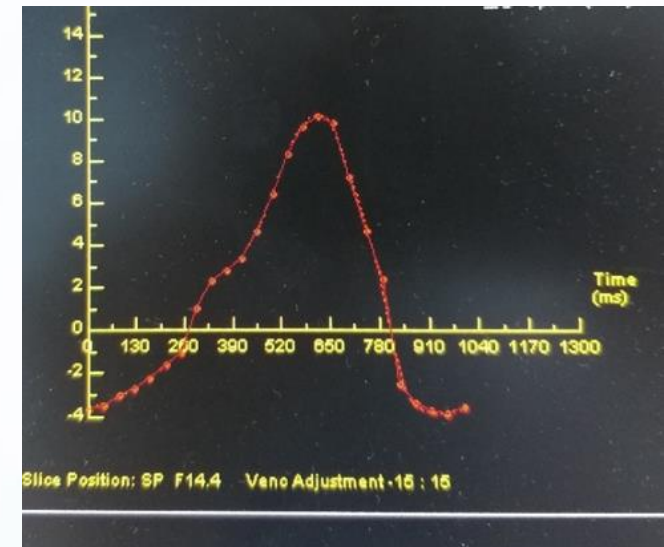
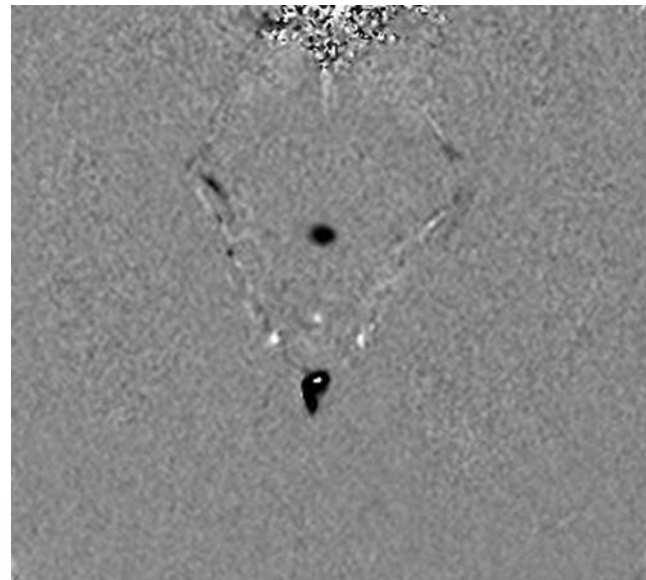
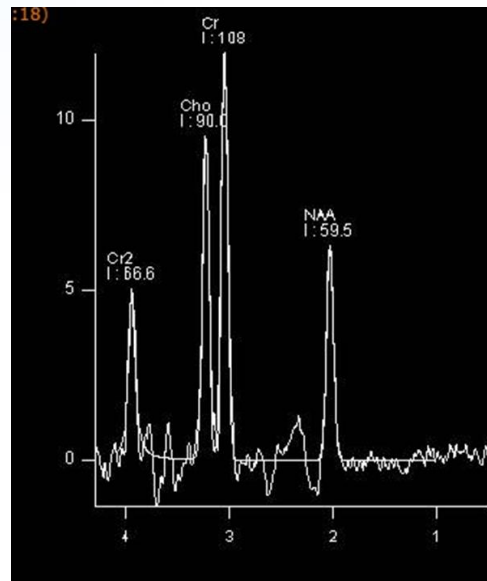
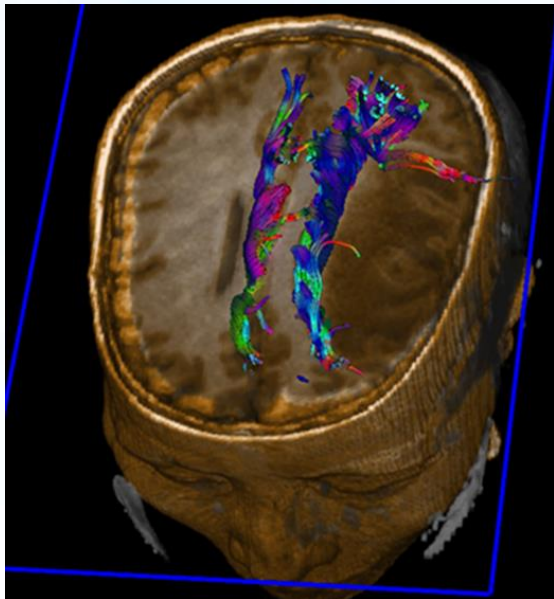
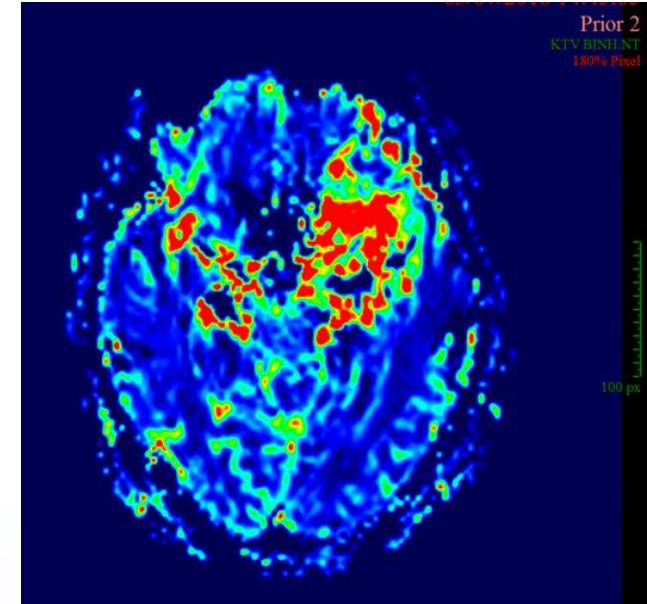
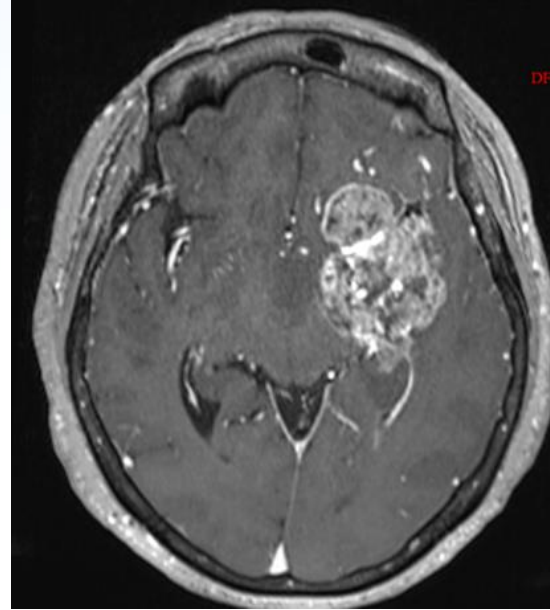
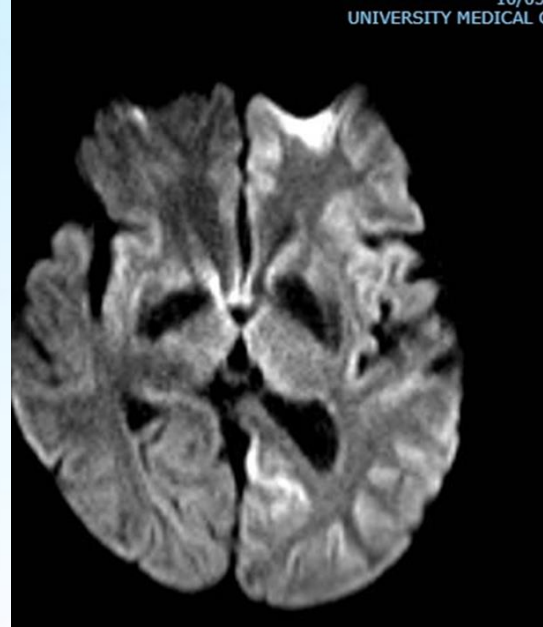
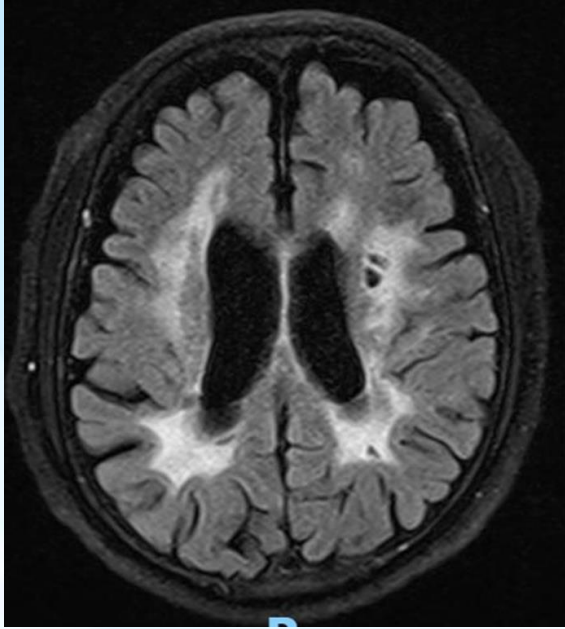
AD
FDG PET



Chuỗi xung nào cho khảo sát SSTT ?

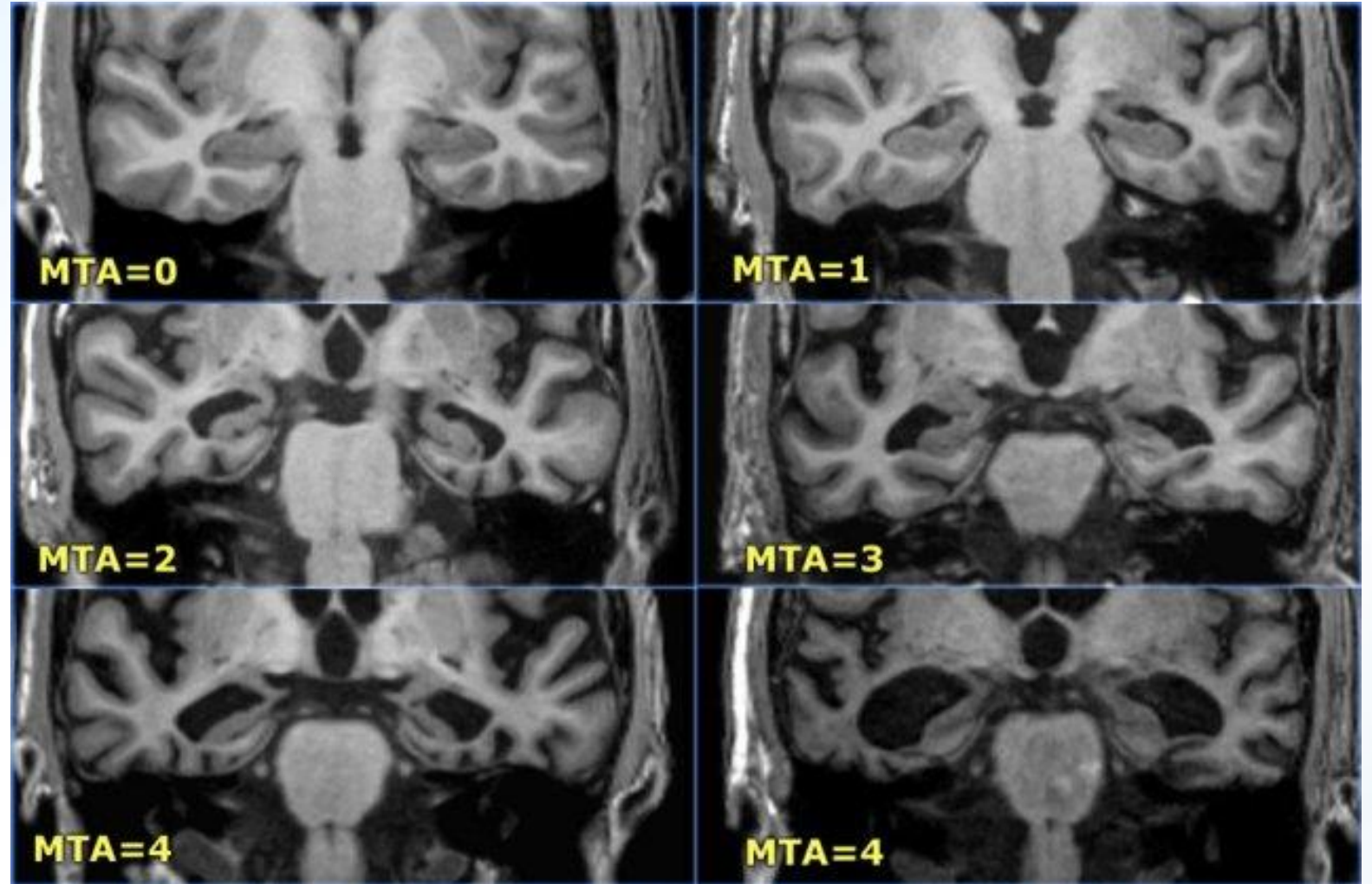
- T1W 3D đẳng hướng, $\leq 1\text{mm}$
 - T2W/FLAIR/T2*/SWI/MRP
 - CSF flow
 - DTI, fMRI, MRS
- Tùy theo loại tổn thương phát hiện mà bs CĐHA quyết định thay đổi protocol cho phù hợp

Bác sĩ CDHA cần làm gì ở bệnh nhân nghi SSTT ?

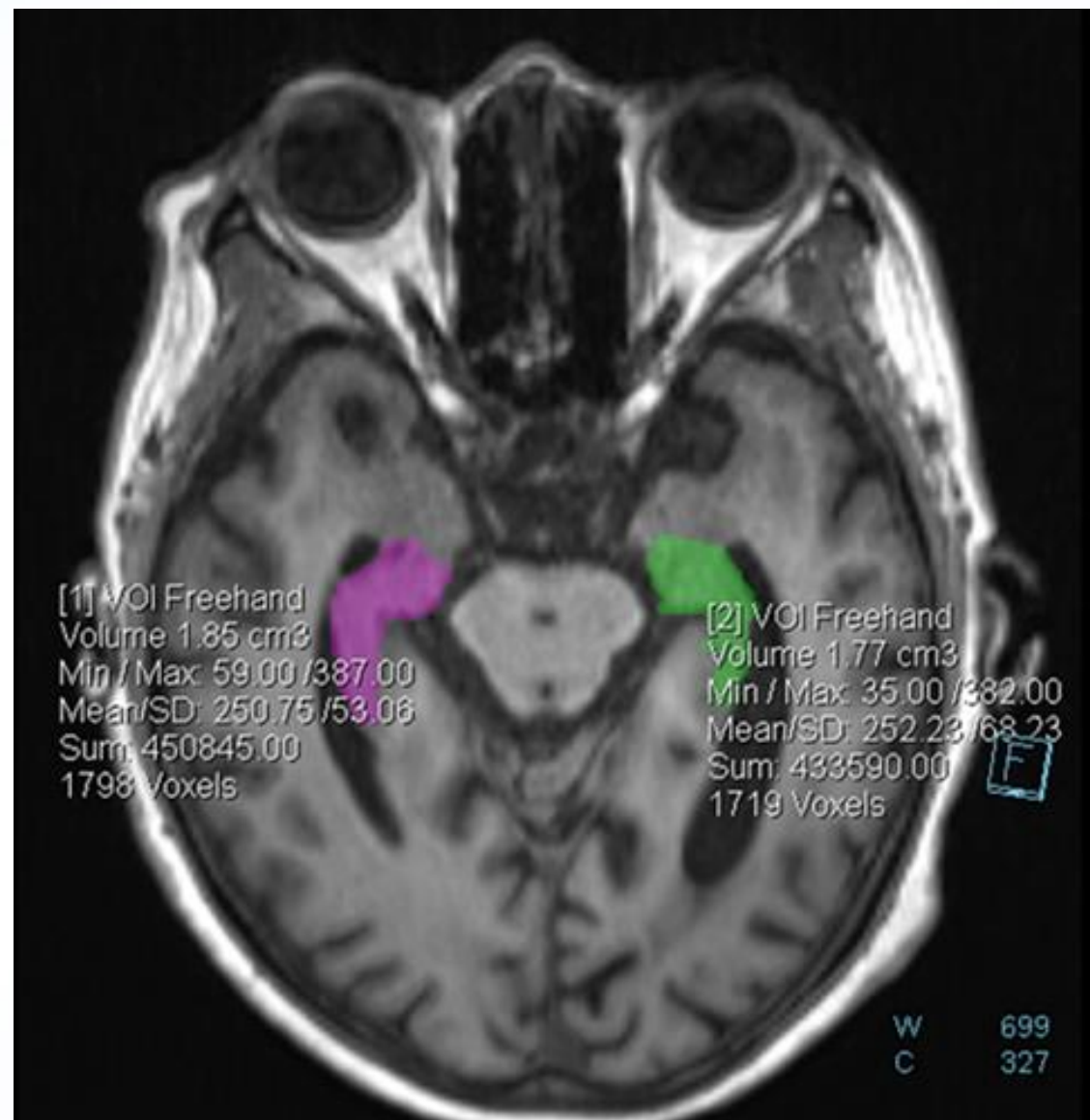
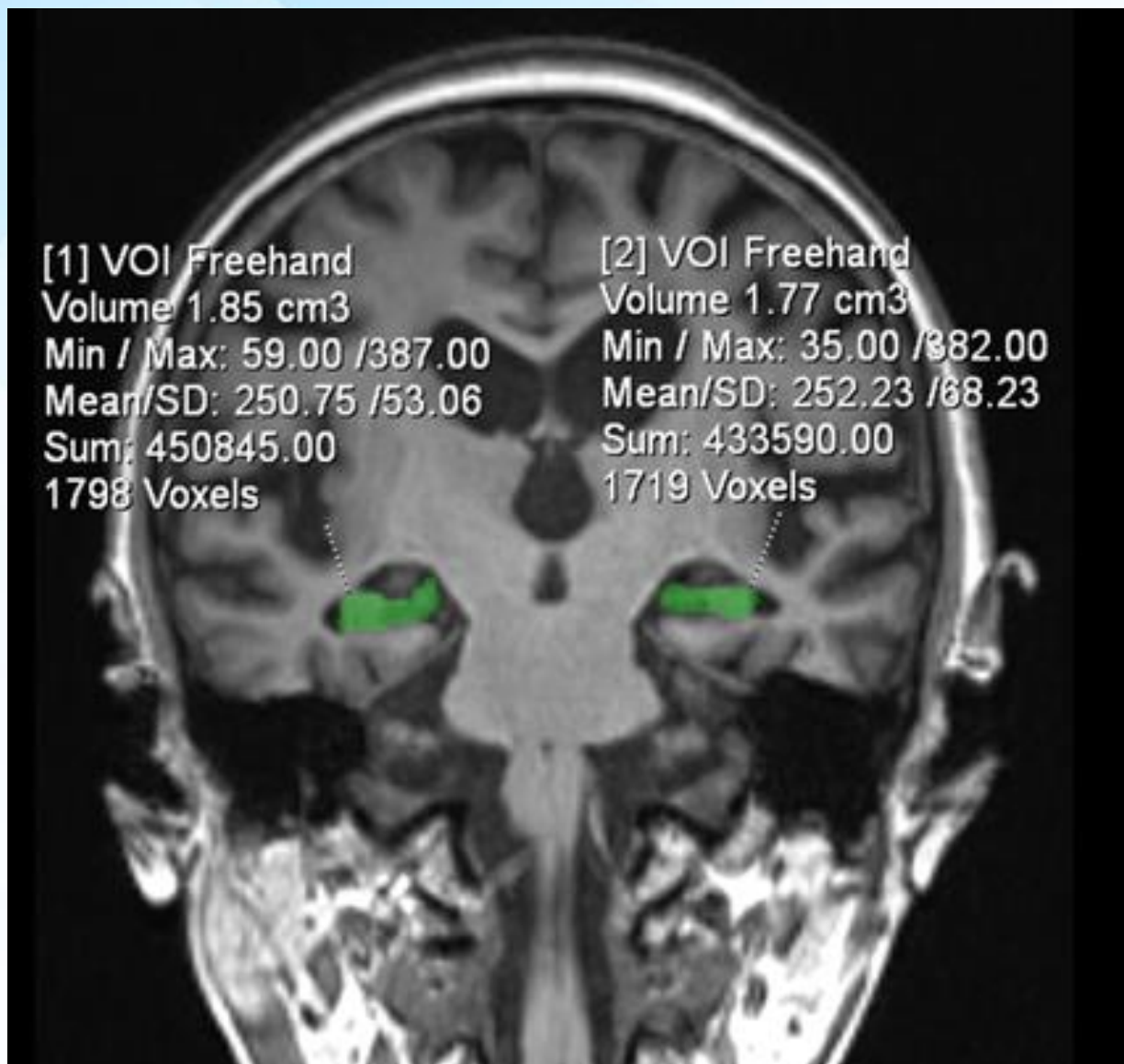


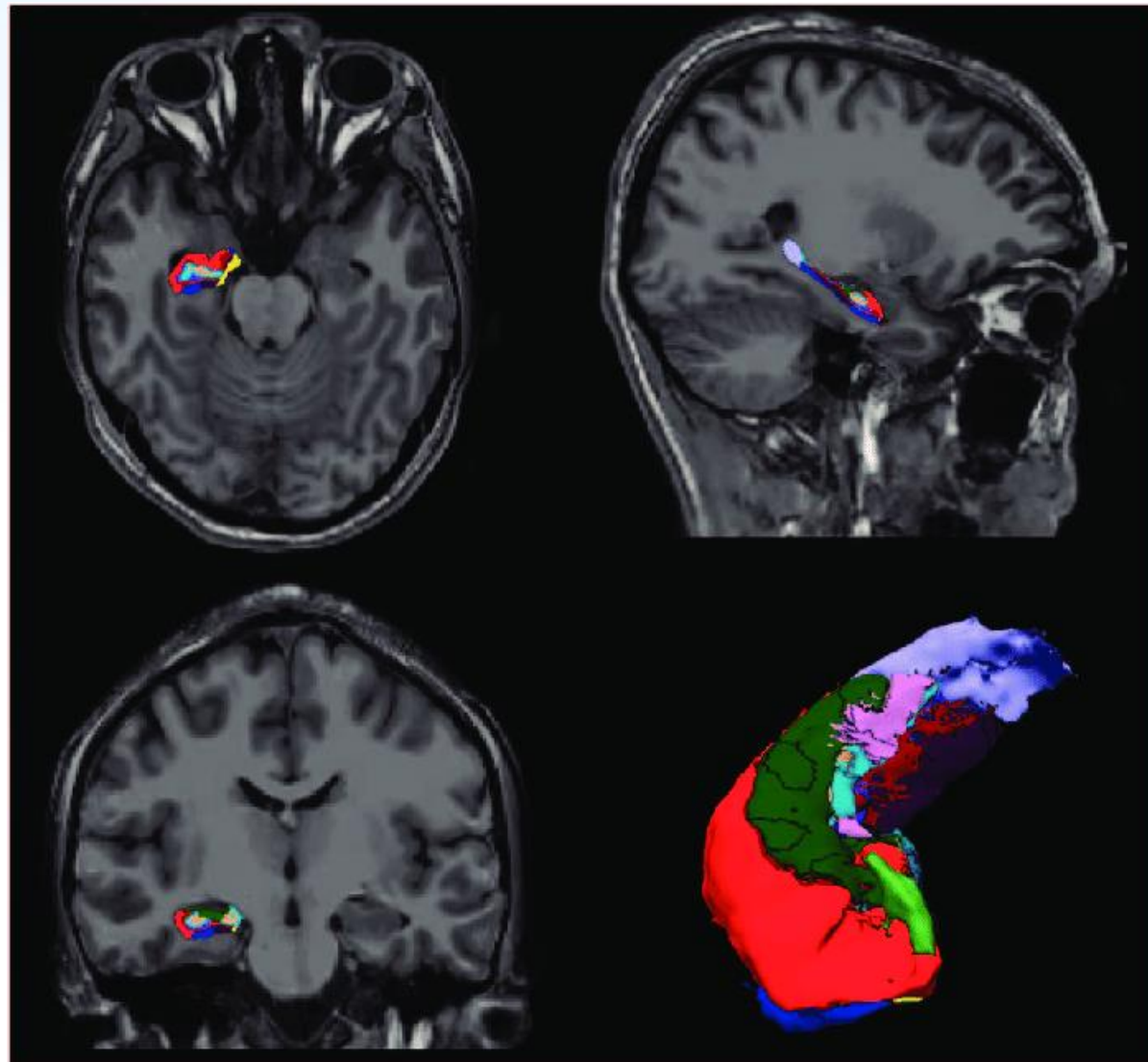
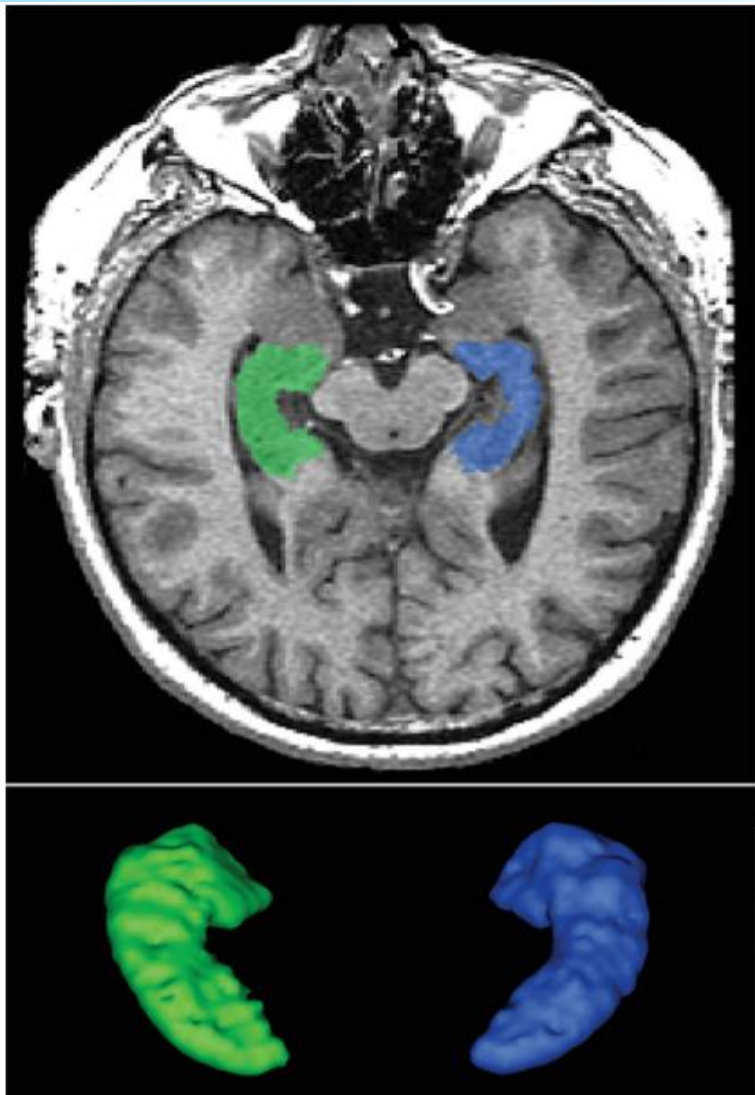
Bác sĩ CĐHA cần đọc gì ở bệnh nhân nghi SSTT ?

Bán định lượng, thường được ưa chuộng



Định lượng thể tích hải mã có khả thi ?

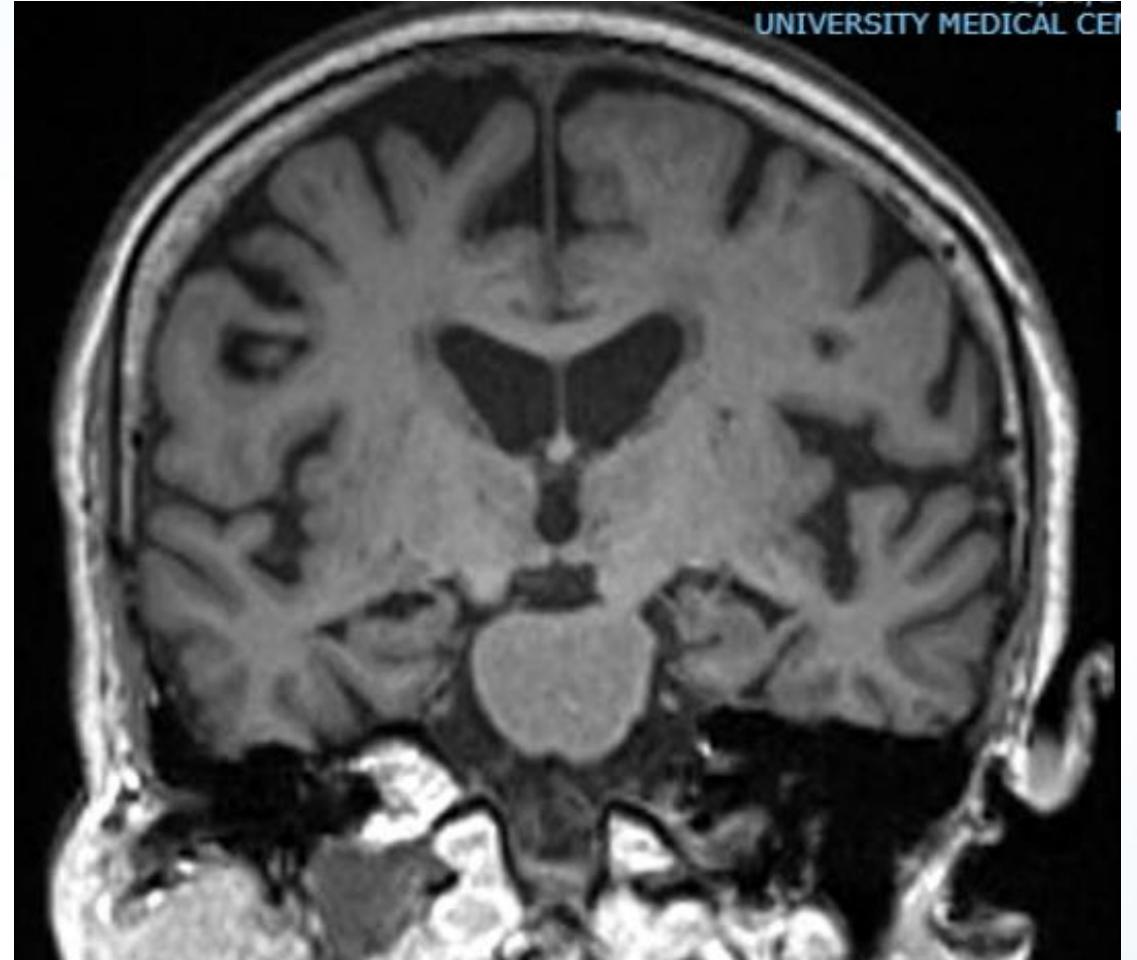
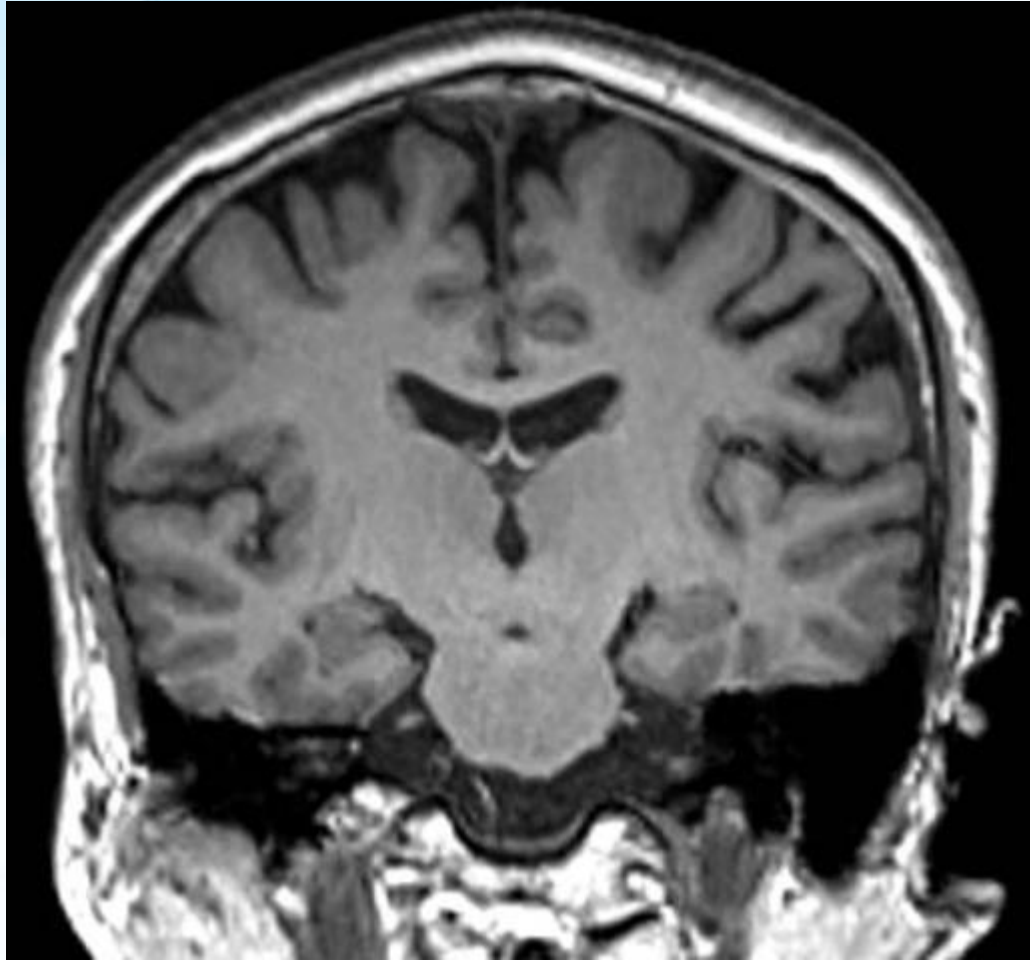




Công cụ phân đoạn đo thể tích hải mã và các phân vùng của hải mã

Maller. Mol Psychiatry, 2018. 23(8): p. 1737-1744.

McNeely, J Alzheimers Dis, 2015. 43(3): p. 785-96



CAT-Segmentation: D:\Neuro\BsChien\t1_mprage_sag_1mm_KHONG CHINH SUA_Series0010.nii

Version: OS / Matlab / SPM12 / CAT12 / seg:

WIN / 24.1 / 7771 / 12.9 (2577) / 1639

Tissue Probability Map:

\color[rgb]{0 0 0}D:\Downloads\spm12\tpm\TPM.nii

Optimized Shooting Registration to:

..s_MNI152NLin2009cAsym\Template_0_GS.nii

affreg / APP / setCOM

mni / default / COM

biasstr

medium

LAS strength / Skull-Stripping:

medium / APRG

WMH Correction / Int. Res.:

(WMH=WM) / optimal(1.00 0.30)

Voxel resolution (original > internal > PBT; vox):

1.00x1.00x1.00 > 1.00x1.00x1.00 > 0.50³ mm³; 1.50³ mm³

Image and Preprocessing Quality:

Resolution:

85.00% (B)

Noise:

95.03% (A)

Bias:

91.71% (A-)

Weighted average (IQR):

86.65% (B)

Mean surface Euler number:

38

Defect area:

1.21%

Processing time:

64:50 min

Volumes:

CSF GM WM

Absolute volume:

449 629 577 cm³ (WM inc. 21cm³ WMHs)

Relative volume:

27.2 38.0 34.8 % (WM inc. 0.0% WMHs)

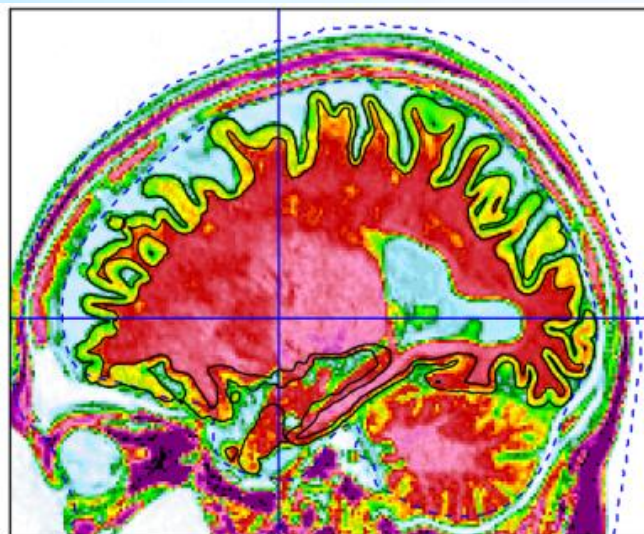
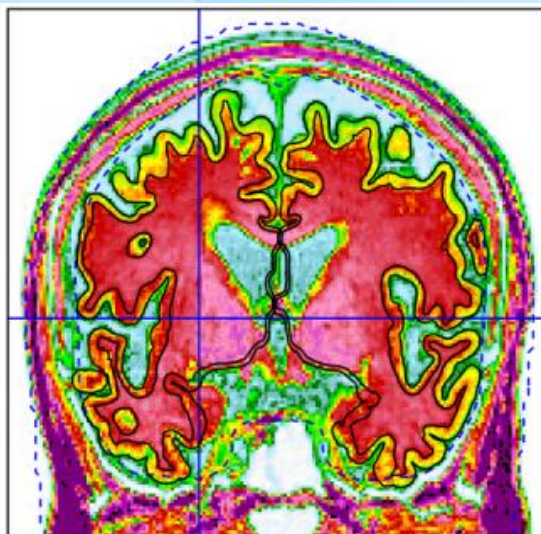
TIV:

1655 cm³

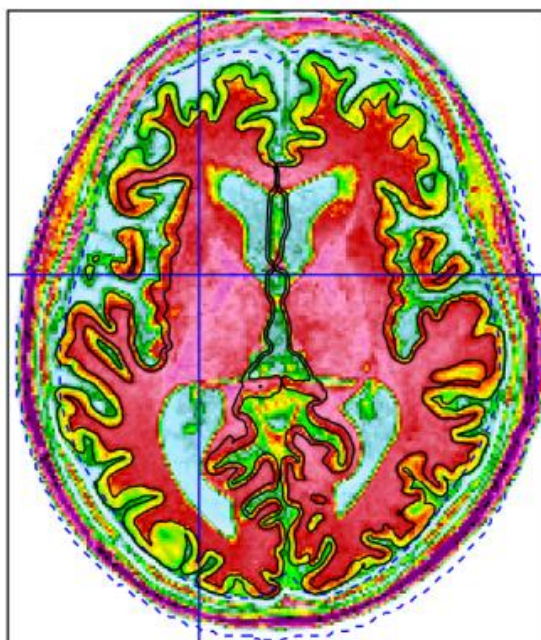
Thickness:

2.17±0.57 mm

*Nguyễn Vũ Bình Dương, Huỳnh Nguyễn Minh Trí
Khoa Kỹ thuật Y sinh, Trường ĐH Quốc tế, ĐHQG TP. Hồ Chí Minh*



***.nii (Original T1)**

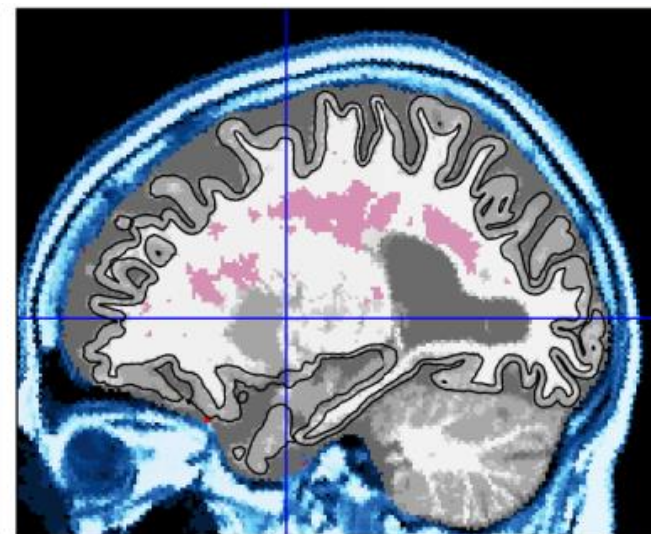
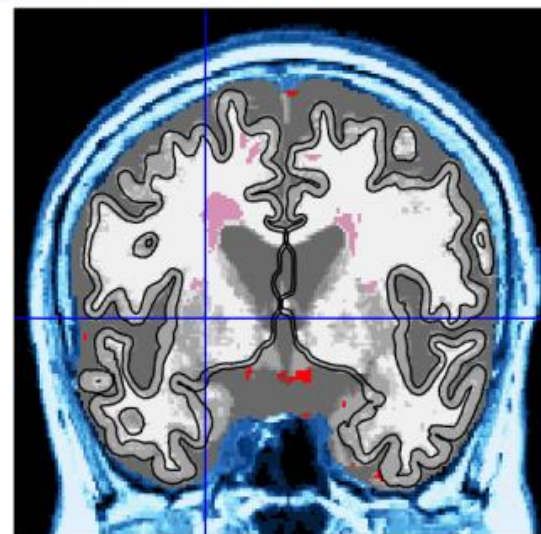


— Brain/skull TPM overlay
— white/pial

Vessels/Head

~WM

BG



p0*.nii (Segmentation)

Vessels/Dura->CSF

— white/pial

WMHs->WM

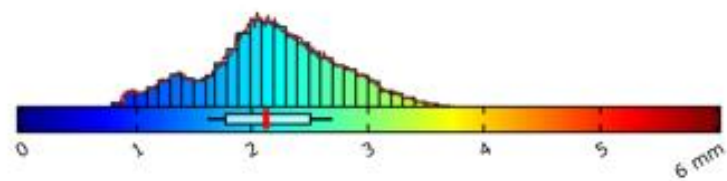
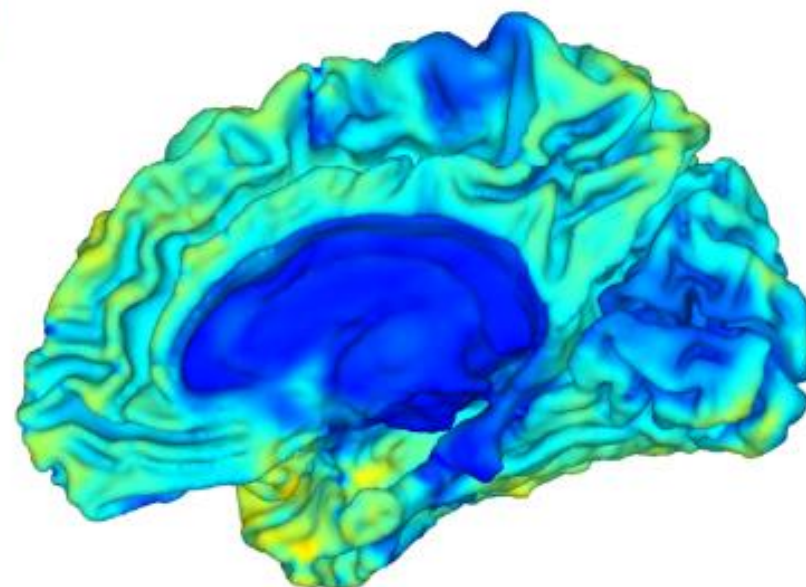
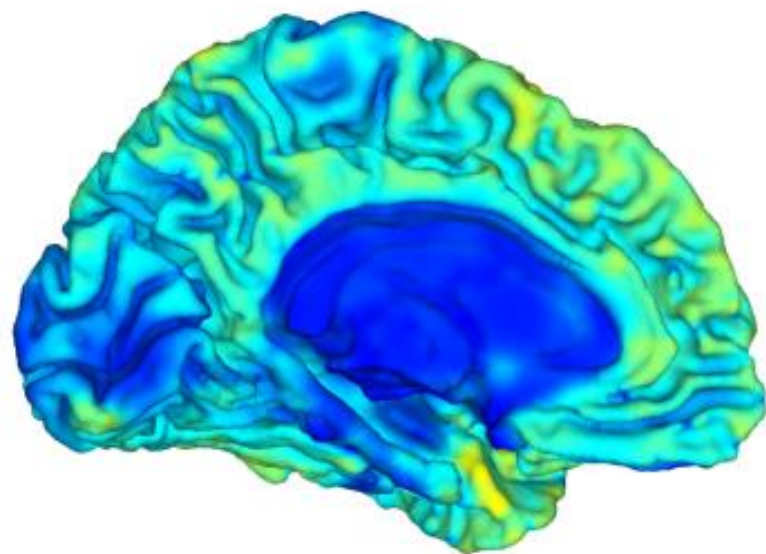
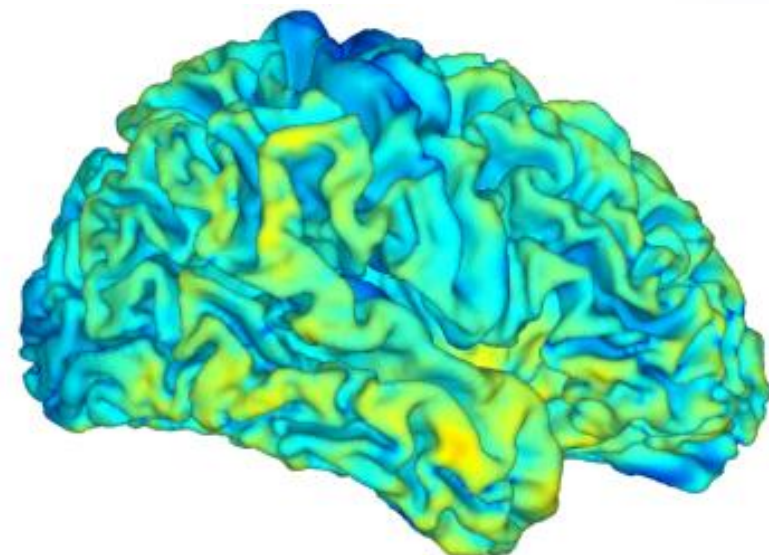
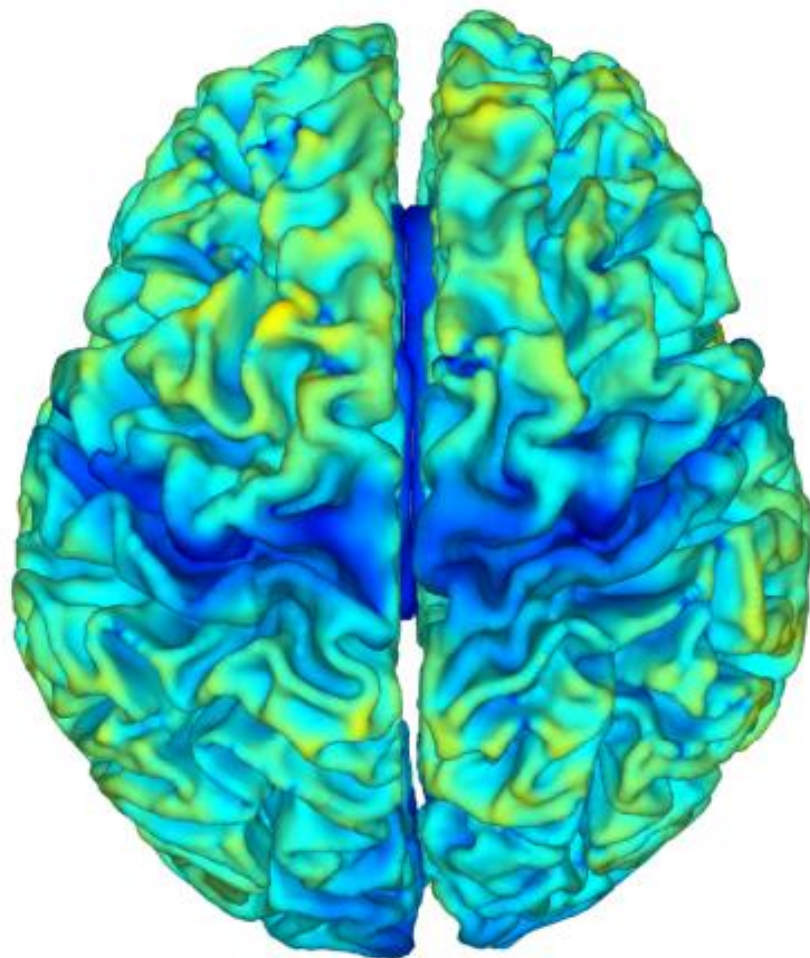
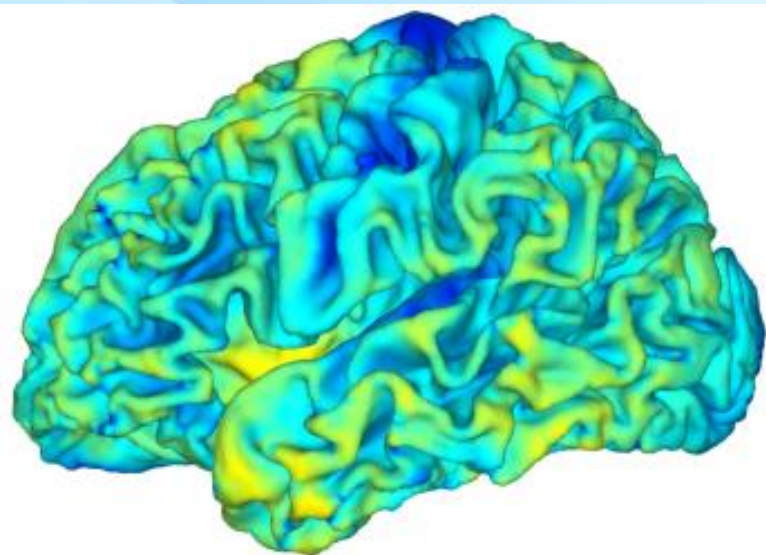
WM

GM

CSF

HD

BG



1	Region				Vcsf	Vgm	Vwm				
2	3rd Ventricle	52	Right Cun cuneus	105	Left Plns posterior insula	1.45900815	1.79923776	0.16273642			
3	4th Ventricle	53	Left Cun cuneus	106	Right PO parietal operculum	1.51693334	1.76442618	0.43762127			
4	Right	24	Right Pallidum	79	Left MOG middle occipital gyrus	1.49498443	1.80130442	0.39569208			
5	Left	25	Left Pallidum	80	Right MOG medial occipital gyrus	7.76277556	6.8479921	3.07714098			
6	Right	26	Right Putamen	81	Left MOG medial occipital gyrus	8.54566563	8.74659798	2.86263229			
7	Left	27	Left Putamen	82	Right MPoG postcentral gyrus	1.56643112	2.26313733	0.36940986			
8	Brain	28	Right Thalamus Pro	83	Left MPoG postcentral gyrus	2.17463582	2.19482004	0.51251893			
9	Right	29	Left Thalamus Pro	84	Right PP planum polare	1.89386472	1.30607561	0.17704222			
10	Left	30	Right Ventral DC	85	Left PP planum polare	2.07515006	1.33461272	0.12521896			
11	Right	31	Left Ventral DC	86	Right PrG precentral gyrus	7.69719551	8.37525089	3.62945187			
12	Left	32	Right vessel	87	Left PrG precentral gyrus	8.20188702	8.97423603	4.18876662			
13	Right	33	Left vessel	88	Right MSFG superior frontal gyrus	1.40996526	1.40304374	0.23797524			
14	Left	34	Optic Chiasm	89	Left MSFG superior frontal gyrus	1.57739969	1.24257398	0.11801116			
15	Right	35	Cerebellar Vermal	90	Right MTG middle temporal gyrus	0.78161557	0.97758318	0.06780357			
16	Left	36	Cerebellar Vermal	91	Left MTG middle temporal gyrus	0.90889726	0.94674805	0.11138766			
17	CSF	37	Cerebellar Vermal	92	Right OCP occipital pole	10.5890002	10.7850227	2.03285618			
18	Right	38	Left Basal Forebrain	93	Left OCP occipital pole	10.8931398	12.4045163	2.47021079			
19	Left	39	Right Basal Forebrain	94	Right OFuG occipital fusiform gyrus	2.85226761	3.42856661	0.87112884			
20	Right	40	Right ACgG anterior cingulate gyrus	95	Left OFuG occipital fusiform gyrus	2.77288763	4.30117779	1.04789264			
21	Left	41	Left ACgG anterior cingulate gyrus	96	Right OpIFG opercular part of the inferior frontal gyrus	4.87562187	8.1478285	1.99447206			
22	Right	42	Right Alns anterior lateral nucleus	97	Left OpIFG opercular part of the inferior frontal gyrus	4.47290238	6.96227776	1.40475354			
23	Left	43	Left Alns anterior lateral nucleus	98	Right SOG superior occipital gyrus	1.82277882	3.18973647	0.93345401			
24	Right	44	Right AOrG anterior orbital gyrus	99	Left SOG superior occipital gyrus	1.98749954	2.60977868	0.81769382			
25	Left	45	Left AOrG anterior orbital gyrus	100	Right SPL superior parietal lobule	6.41769232	8.56992045	2.55729661			
26	Right	46	Right AnG angular gyrus	101	Left SPL superior parietal lobule	6.75715724	10.1374065	2.54933587			
27	Left	47	Left AnG angular gyrus	102	Right STG superior temporal gyrus	2.77291901	5.84748352	1.10254726			
28	Right	48	Right Calc calcarine sulcus	103	Left STG superior temporal gyrus	2.93573777	4.24972315	0.90049732			
29	Left	49	Left Calc calcarine sulcus	104	Right TMP temporal pole	5.9345105	6.6087737	1.04664558			
30	Right	50	Right CO central operculum	105	Left TMP temporal pole	6.96280322	7.30333874	1.08277873			
31	Left	51	Left CO central operculum	106	Right TrIFG triangular part of the inferior frontal gyrus	1.69170891	2.58046903	0.54679718			
32	Right	52	Right MOG middle occipital gyrus	107	Left PCu precuneus	1.84442576	2.34463495	0.52791492			
33	Left	53	Left MOG middle occipital gyrus	108	Right PHG parahippocampal gyrus	1.25785232	0.84550544	0.44662907			
34	Right	54	Right Entorhinal cortex	109	Left PHG parahippocampal gyrus	1.0935316	1.16507242	0.53938153			
35	Left	55	Left Entorhinal cortex	110	Right Plns posterior insula	379.115504	606.947116	576.187426			
36	Right	56	Right FO frontal operculum	111	Left Plns posterior insula						
37	Left	57	Left FO frontal operculum	112	Right PO parietal operculum						
38	Brain	58	Right FRP frontal precentral gyrus	113	Left PO parietal operculum						
39	Right	59	Left FRP frontal precentral gyrus	114	Right PoG postcentral gyrus						
40	Left	60	Right FuG fusiform gyrus	115	Left PoG postcentral gyrus						
41	Right	61	Left FuG fusiform gyrus	116	Right POrG posterior orbital gyrus						
42	Left	62	Right GRe gyrus	117	Left POrG posterior orbital gyrus						
43	Right	63	Left GRe gyrus	118	Right PP planum polare						
44	Left	64	Right IOG inferior occipital gyrus	119	Left PP planum polare						
45	Right	65	Left IOG inferior occipital gyrus	120	Right PrG precentral gyrus						
46	Left	66	Right ITG inferior temporal gyrus	121	Left PrG precentral gyrus						
47	Right	67	Left ITG inferior temporal gyrus	122	Right PT planum temporale						
48	Left	68	Right LiG lingual gyrus	123	Left PT planum temporale						
49	Right	69	Left LiG lingual gyrus	124	Right SCA subcallosal area						
50	Left	70	Right LORG lateral occipital gyrus	125	Left SCA subcallosal area						
51	Right	71	Left LORG lateral occipital gyrus	126	Right SFG superior frontal gyrus						
52	Left	72	Right MCgG middle cingulate gyrus	127	Left SFG superior frontal gyrus						
53	Right	73	Left MCgG middle cingulate gyrus	128	Right SMC supplementary motor cortex						
54	Left	74	Right MFC medial frontal cortex	129	Left SMC supplementary motor cortex						
55	Right	75	Left MFC medial frontal cortex	130	Right SMG supramarginal gyrus						
56	Left	76	Right MFG middle frontal gyrus	131	Left SMG supramarginal gyrus						
57	Right	77	Left MFG middle frontal gyrus	132	Right SOG superior occipital gyrus						
58	Left	78	Right MOG middle occipital gyrus	133	Left SOG superior occipital gyrus						
59	Right	79	Left MOG middle occipital gyrus	134	Right SPL superior parietal lobule						
60	Left	80	Right MOG middle occipital gyrus	135	Left SPL superior parietal lobule						
61	Right	81	Left MOG middle occipital gyrus	136	Right STG superior temporal gyrus						
62	Left	82	Right MOG middle occipital gyrus	137	Left STG superior temporal gyrus						
63	Right	83	Left MOG middle occipital gyrus	138	Right TMP temporal pole						
64	Left	84	Right MOG middle occipital gyrus	139	Left TMP temporal pole						
65	Right	85	Left MOG middle occipital gyrus	140	Right TrIFG triangular part of the inferior frontal gyrus						
66	Left	86	Right MOG middle occipital gyrus	141	Left TrIFG triangular part of the inferior frontal gyrus						
67	Right	87	Left MOG middle occipital gyrus	142	Right TFG transverse temporal gyrus						
68	Left	88	Right MOG middle occipital gyrus	143	Left TFG transverse temporal gyrus						
69	Right	89	Left MOG middle occipital gyrus	144	Tổng (cm3)						
70	Left	90	Right MOG middle occipital gyrus	145							
71	Right	91	Left MOG middle occipital gyrus	146							
72	Left	92	Right MOG middle occipital gyrus	147							
73	Right	93	Left MOG middle occipital gyrus	148							
74	Left	94	Right MOG middle occipital gyrus	149							
75	Right	95	Left MOG middle occipital gyrus	150							
76	Left	96	Right MOG middle occipital gyrus	151							
77	Right	97	Left MOG middle occipital gyrus	152							
78	Left	98	Right MOG middle occipital gyrus	153							
79	Right	99	Left MOG middle occipital gyrus	154							
80	Left	100	Right MOG middle occipital gyrus	155							
81	Right	101	Left MOG middle occipital gyrus	156							
82	Left	102	Right MOG middle occipital gyrus	157							
83	Right	103	Left MOG middle occipital gyrus	158							
84	Left	104	Right MOG middle occipital gyrus	159							
85	Right	105	Left MOG middle occipital gyrus	160							
86	Left	106	Right MOG middle occipital gyrus	161							
87	Right	107	Left MOG middle occipital gyrus	162							
88	Left	108	Right MOG middle occipital gyrus	163							
89	Right	109	Left MOG middle occipital gyrus	164							
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91	Right	111	Left MOG middle occipital gyrus	166							
92	Left	112	Right MOG middle occipital gyrus	167							
93	Right	113	Left MOG middle occipital gyrus	168							
94	Left	114	Right MOG middle occipital gyrus	169							
95	Right	115	Left MOG middle occipital gyrus	170							
96	Left	116	Right MOG middle occipital gyrus	171							
97	Right	117	Left MOG middle occipital gyrus	172							
98	Left	118	Right MOG middle occipital gyrus	173							
99	Right	119	Left MOG middle occipital gyrus	174							
100	Left	120	Right MOG middle occipital gyrus	175							
101	Right	121	Left MOG middle occipital gyrus	176							
102	Left	122	Right MOG middle occipital gyrus	177							
103	Right	123	Left MOG middle occipital gyrus	178							
104	Left	124	Right MOG middle occipital gyrus	179							
105	Right	125	Left MOG middle occipital gyrus	180							
106	Left	126	Right MOG middle occipital gyrus	181							
107	Right	127	Left MOG middle occipital gyrus	182							
108	Left	128	Right MOG middle occipital gyrus	183							
109	Right	129	Left MOG middle occipital gyrus	184							
110	Left	130	Right MOG middle occipital gyrus	185							
111	Right	131	Left MOG middle occipital gyrus	186							
112	Left	132	Right MOG middle occipital gyrus	187							
113	Right	133	Left MOG middle occipital gyrus	188							
114	Left	134	Right MOG middle occipital gyrus	189							
115	Right	135	Left MOG middle occipital gyrus	190							
116	Left	136	Right MOG middle occipital gyrus	191							
117	Right	137	Left MOG middle occipital gyrus	192							
118	Left	138	Right MOG middle occipital gyrus	193							
119	Right	139	Left MOG middle occipital gyrus	194							
120	Left	140	Right MOG middle occipital gyrus	195							
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122	Left	142	Right MOG middle occipital gyrus	197							
123	Right	143	Left MOG middle occipital gyrus	198							
124	Left	144	Right MOG middle occipital gyrus	199							
125	Right	145	Left MOG middle occipital gyrus	200							
126	Left	146	Right MOG middle occipital gyrus	201							
127	Right	147	Left MOG middle occipital gyrus	202							
128	Left	148	Right MOG middle occipital gyrus	203							
129	Right	149	Left MOG middle occipital gyrus	204							
130	Left	150	Right MOG middle occipital gyrus	205							
131	Right	151	Left MOG middle occipital gyrus	206							
132	Left	152	Right MOG middle occipital gyrus	207							
133	Right	153	Left MOG middle occipital gyrus	208							
134	Left	154	Right MOG middle occipital gyrus	209							
135	Right	155	Left MOG middle occipital gyrus	210							
136	Left	156	Right MOG middle occipital gyrus	211							
137	Right	157	Left MOG middle occipital gyrus	212							
138	Left	158	Right MOG middle occipital gyrus	213							
139	Right	159	Left MOG middle occipital gyrus	214							
140	Left	160	Right MOG middle occipital gyrus	215							
141	Right	161	Left MOG middle occipital gyrus	216							

1	Region	Vcsf	Vgm	Vwm
18	Right Hippocampus	0.700314034	2.636492256	0.249406559
19	Left Hippocampus	0.904748271	2.269113761	0.216489081
40	Right ACgG anterior cingulate gyrus	1.59881527	3.004992316	0.331217901
41	Left ACgG anterior cingulate gyrus	1.518152944	3.309128001	0.545761892
72	Right MCgG middle cingulate gyrus	1.081943439	4.152696195	0.741329511
73	Left MCgG middle cingulate gyrus	1.35991455	3.665200675	0.569855885
98	Right PCgG posterior cingulate gyrus	1.288212957	3.087772289	0.685988619
99	Left PCgG posterior cingulate gyrus	1.467474779	3.482382016	0.653114279
100	Right PCu precuneus	4.630980008	10.17282589	2.214114069
101	Left PCu precuneus	4.602125256	9.141144953	2.035660085
102	Right PHG parahippocampal gyrus	1.788182919	2.367203466	0.599589064
103	Left PHG parahippocampal gyrus	2.019801332	2.381415157	0.513769899

1	Region	Thickness
2	l17Networks_left hemisphere_VisCent_striate cortex_1	1.836218422
3	r17Networks_right hemisphere_VisCent_striate cortex_1	1.887454193
4	l17Networks_left hemisphere_VisCent_striate cortex_2	1.537995861
5	r17Networks_right hemisphere_VisCent_striate cortex_2	1.284051011
6	l17Networks_left hemisphere_VisCent_striate cortex_3	1.35478139
7	r17Networks_right hemisphere_VisCent_striate cortex_3	1.656196117
8	l17Networks_left hemisphere_VisCent_extrastriate cortex_1	2.507507511
9	r17Networks_right hemisphere_VisCent_extrastriate cortex_1	2.61008662
10	l17Networks_left hemisphere_VisCent_extrastriate cortex_2	2.184889902
11	r17Networks_right hemisphere_VisCent_extrastriate cortex_2	2.052463844
12	l17Networks_left hemisphere_VisCent_extrastriate cortex_3	2.116155679
13	r17Networks_right hemisphere_VisCent_extrastriate cortex_3	2.145328134
14	l17Networks_left hemisphere_VisCent_extrastriate cortex_4	2.018442494
15	r17Networks_right hemisphere_VisCent_extrastriate cortex_4	1.897643363
16	l17Networks_left hemisphere_VisCent_extrastriate cortex_5	2.409663199
594	l17Networks_left hemisphere_temporal parietal_5	2.324896419
595	r17Networks_right hemisphere_temporal parietal_10	2.28536216
596	l17Networks_left hemisphere_temporal parietal_6	2.274589893
597	r17Networks_right hemisphere_temporal parietal_11	2.557090376
598	l17Networks_left hemisphere_temporal parietal_7	2.055555419
599	r17Networks_right hemisphere_temporal parietal_12	2.47627281
600	l17Networks_left hemisphere_temporal parietal_8	2.283079492
601	r17Networks_right hemisphere_temporal parietal_13	2.292412308

CAT-Segmentation: D:\Neuro\BsChien\t1_mprage_sag_1mm_KHONG CHINH SUA_Series0010.nii

Version: OS / Matlab / SPM12 / CAT12 / seg:
Tissue Probability Map:
Optimized Shooting Registration to:
affreg / APP / setCOM
biasstr
LAS strength / Skull-Stripping:
WMH Correction / Int. Res.:
Voxel resolution (original > internal > PBT; vox):

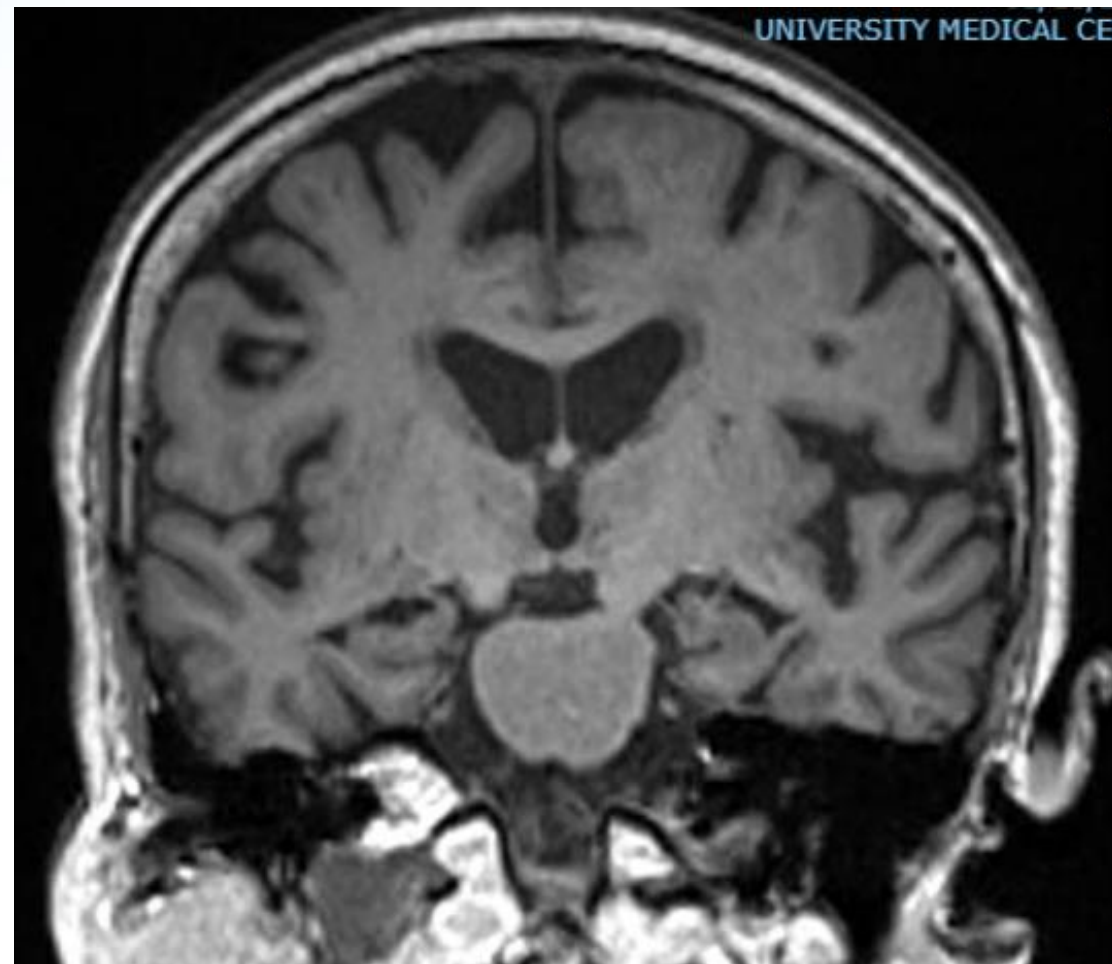
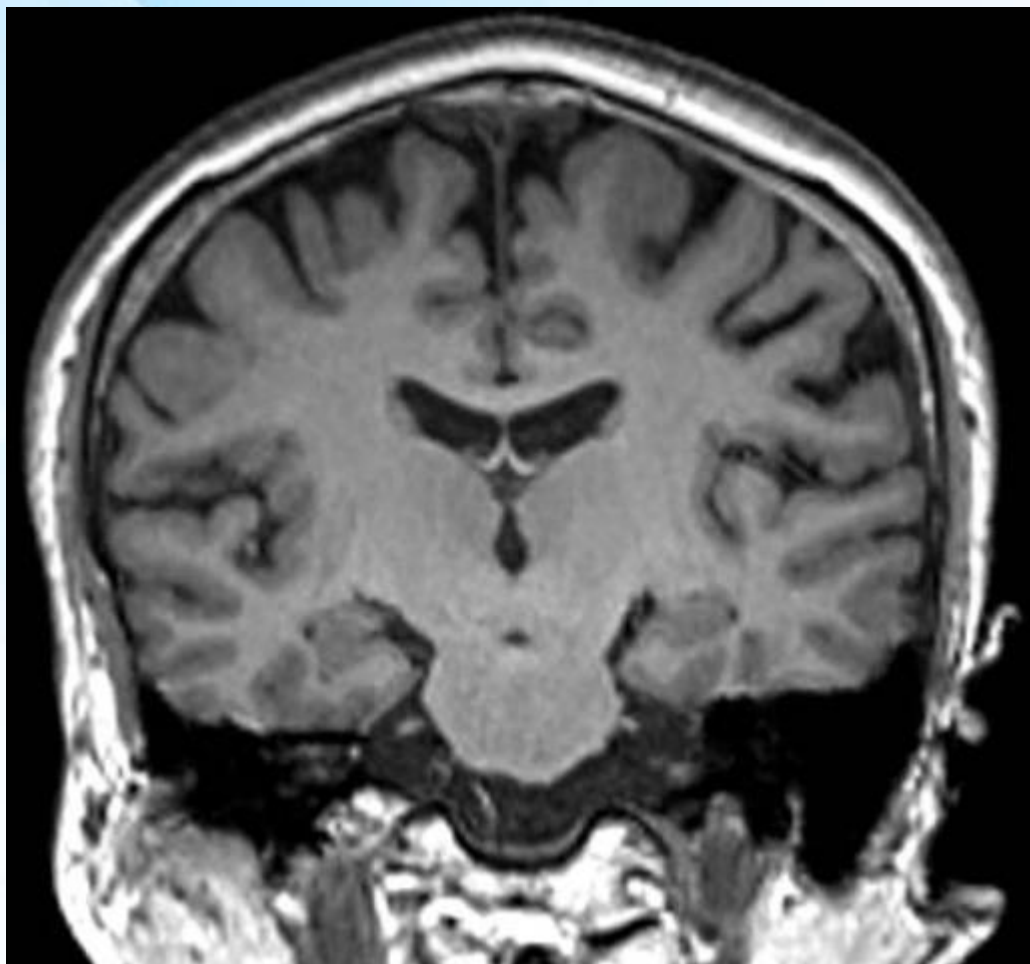
WIN / 24.1 / 7771 / 12.9 (2577) / 1639
\color{rgb}{0 0 0}D:\Downloads\spm12\tpm\TPM.nii
..s_MNI152Nlin2009cAsym\Template_O_GS.nii
mni / default / COM
medium
medium / APRG
(WMH=WM) / optimal(1.00 0.30)
1.00x1.00x1.00 > 1.00x1.00x1.00 > 0.50³ mm³; 1.50³ mm³

Image and Preprocessing Quality:

Resolution: 85.00% (B)
Noise: 95.03% (A)
Bias: 91.71% (A-)
Weighted average (IQR): 86.65% (B)
Mean surface Euler number: 38
Defect area: 1.21%
Processing time: 64:50 min

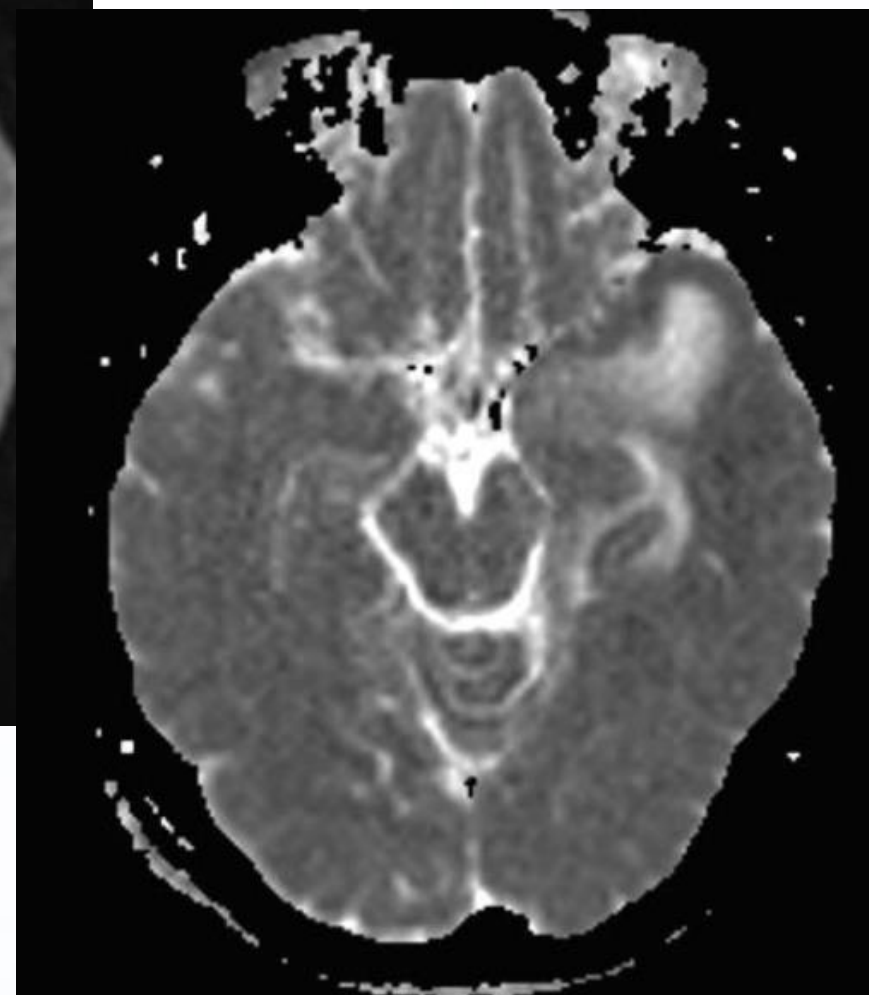
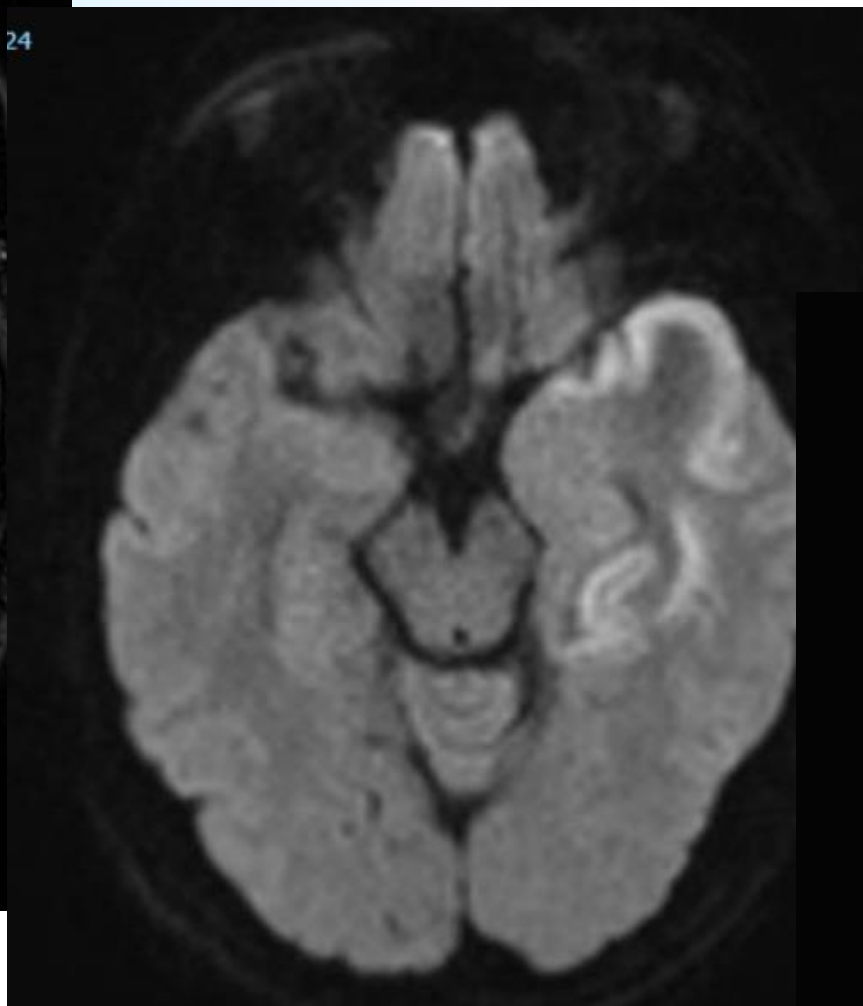
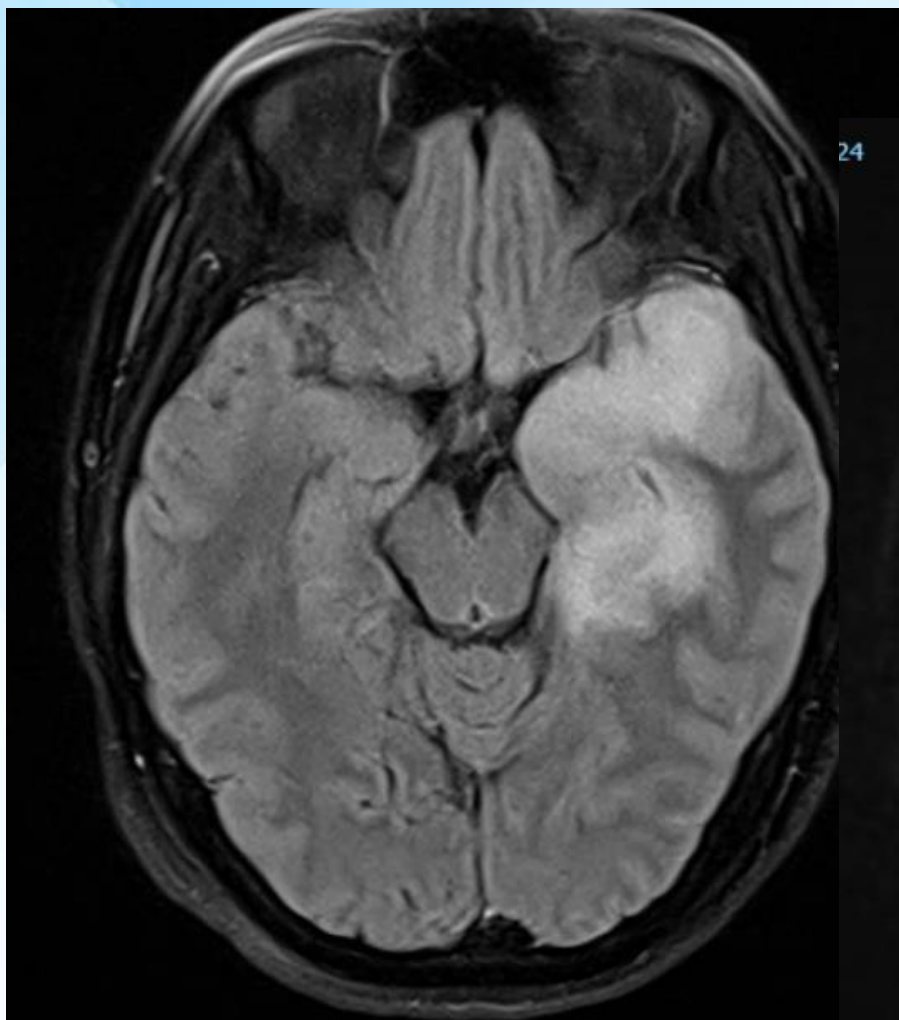
Volumes: CSF GM WM
Absolute volume: 449 629 577 cm³ (WM inc. 21cm³ WMHs)
Relative volume: 27.2 38.0 34.8 % (WM inc. 0.0% WMHs)
TIV: 1655 cm³
Thickness: 2.17±0.57 mm

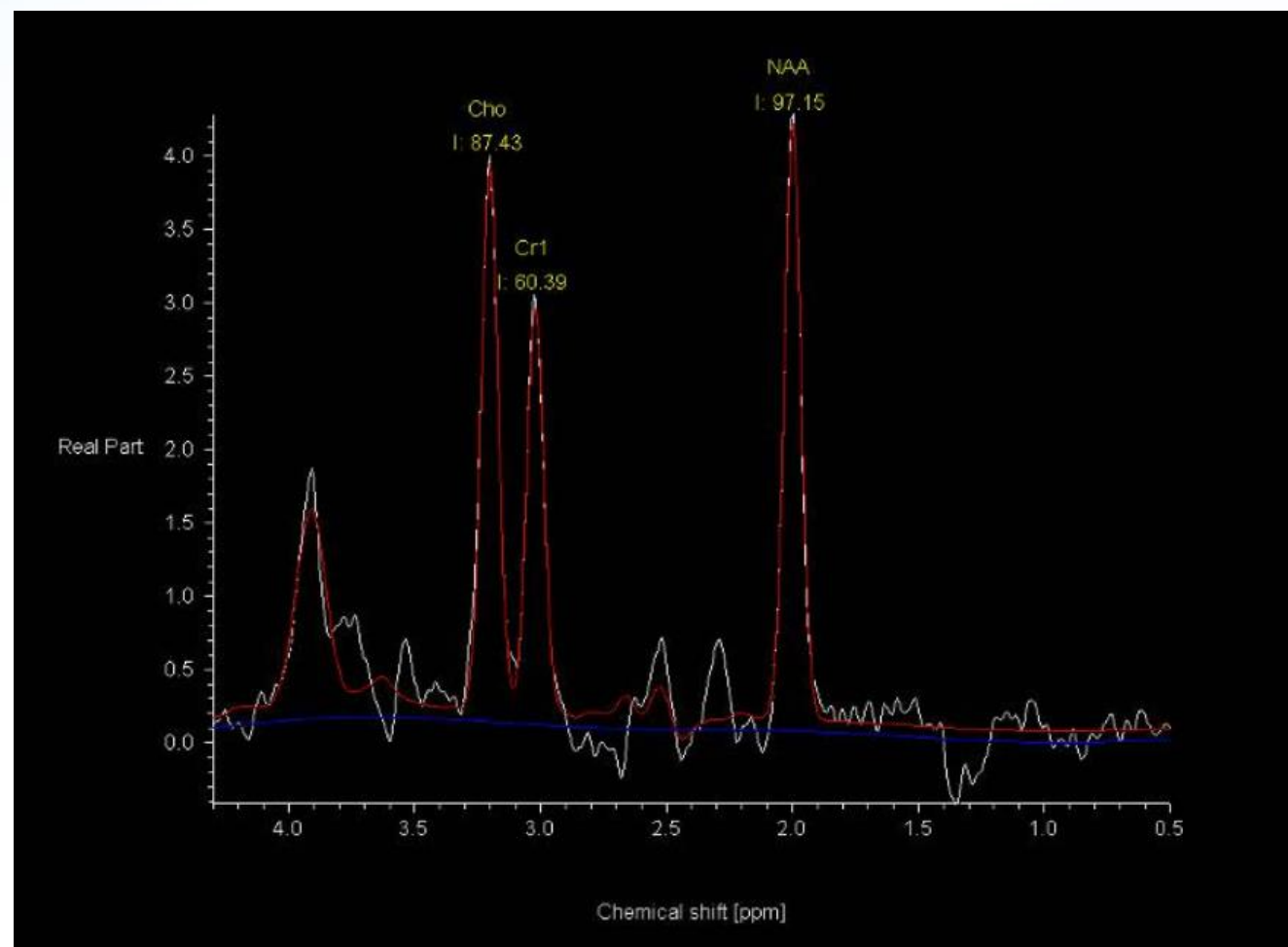
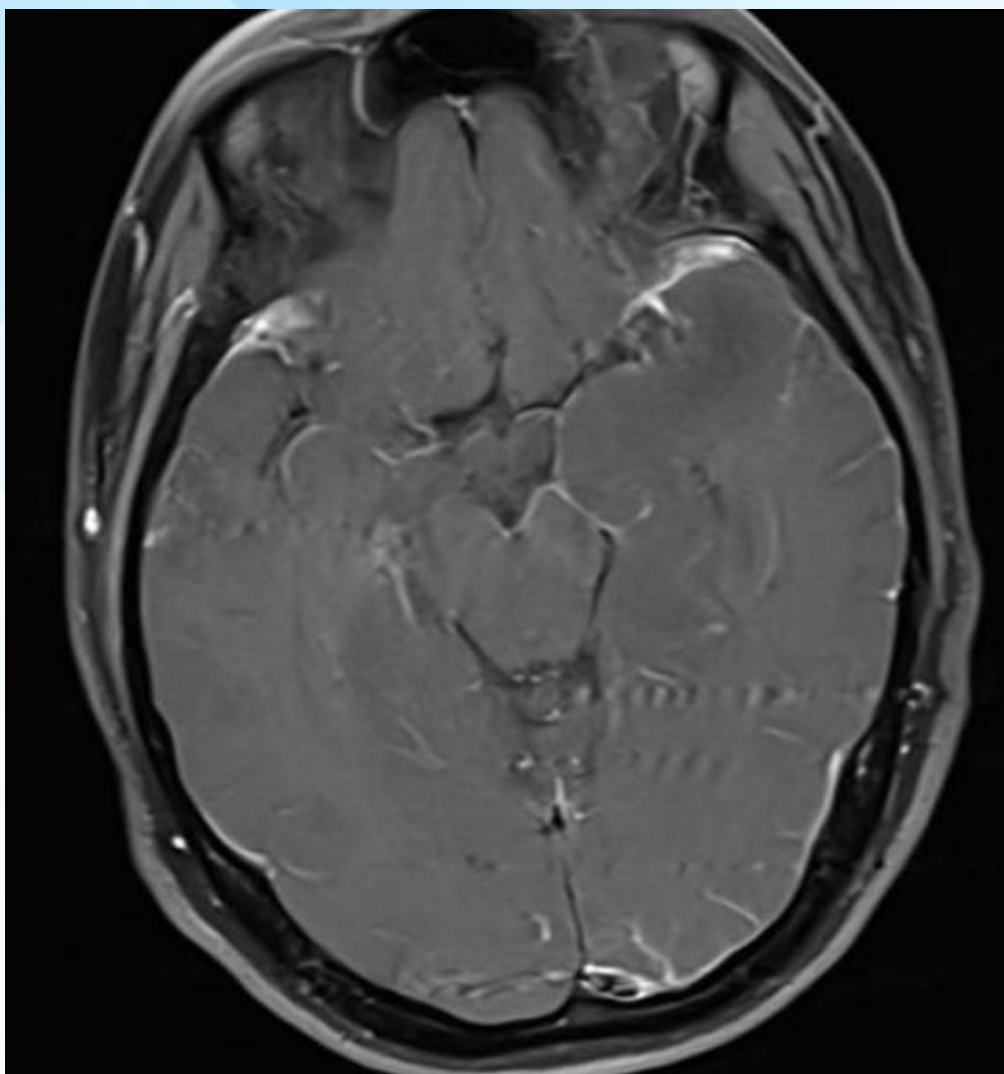
	Region	Thickness
1		
2	l17Networks_left hemisphere_VisCent_striate cortex_1	1.836218422
3	r17Networks_right hemisphere_VisCent_striate cortex_1	1.887454193
4	l17Networks_left hemisphere_VisCent_striate cortex_2	1.537995861
5	r17Networks_right hemisphere_VisCent_striate cortex_2	1.284051011
6	l17Networks_left hemisphere_VisCent_striate cortex_3	1.35478139
7	r17Networks_right hemisphere_VisCent_striate cortex_3	1.656196117
8	l17Networks_left hemisphere_VisCent_extrastriate cortex_1	2.507507511
9	r17Networks_right hemisphere_VisCent_extrastriate cortex_1	2.61008662
10	l17Networks_left hemisphere_VisCent_extrastriate cortex_2	2.184889902
11	r17Networks_right hemisphere_VisCent_extrastriate cortex_2	2.052463844
12	l17Networks_left hemisphere_VisCent_extrastriate cortex_3	2.116155679
13	r17Networks_right hemisphere_VisCent_extrastriate cortex_3	2.145328134
14	l17Networks_left hemisphere_VisCent_extrastriate cortex_4	2.018442494
15	r17Networks_right hemisphere_VisCent_extrastriate cortex_4	1.897643363
16	l17Networks_left hemisphere_VisCent_extrastriate cortex_5	2.409663199
17	r17Networks_right hemisphere_VisCent_extrastriate cortex_5	1.939517437
18	l17Networks_left hemisphere_VisCent_extrastriate cortex_6	1.995396504
19	r17Networks_right hemisphere_VisCent_extrastriate cortex_6	2.086842237
20	l17Networks_left hemisphere_VisCent_extrastriate cortex_7	2.468345426
21	r17Networks_right hemisphere_VisCent_extrastriate cortex_7	2.117931084
22	l17Networks_left hemisphere_VisCent_extrastriate cortex_8	1.943555005
23	r17Networks_right hemisphere_VisCent_extrastriate cortex_8	2.036536529
24	l17Networks_left hemisphere_VisCent_extrastriate cortex_9	2.214332204
25	r17Networks_right hemisphere_VisCent_extrastriate cortex_9	1.973138301
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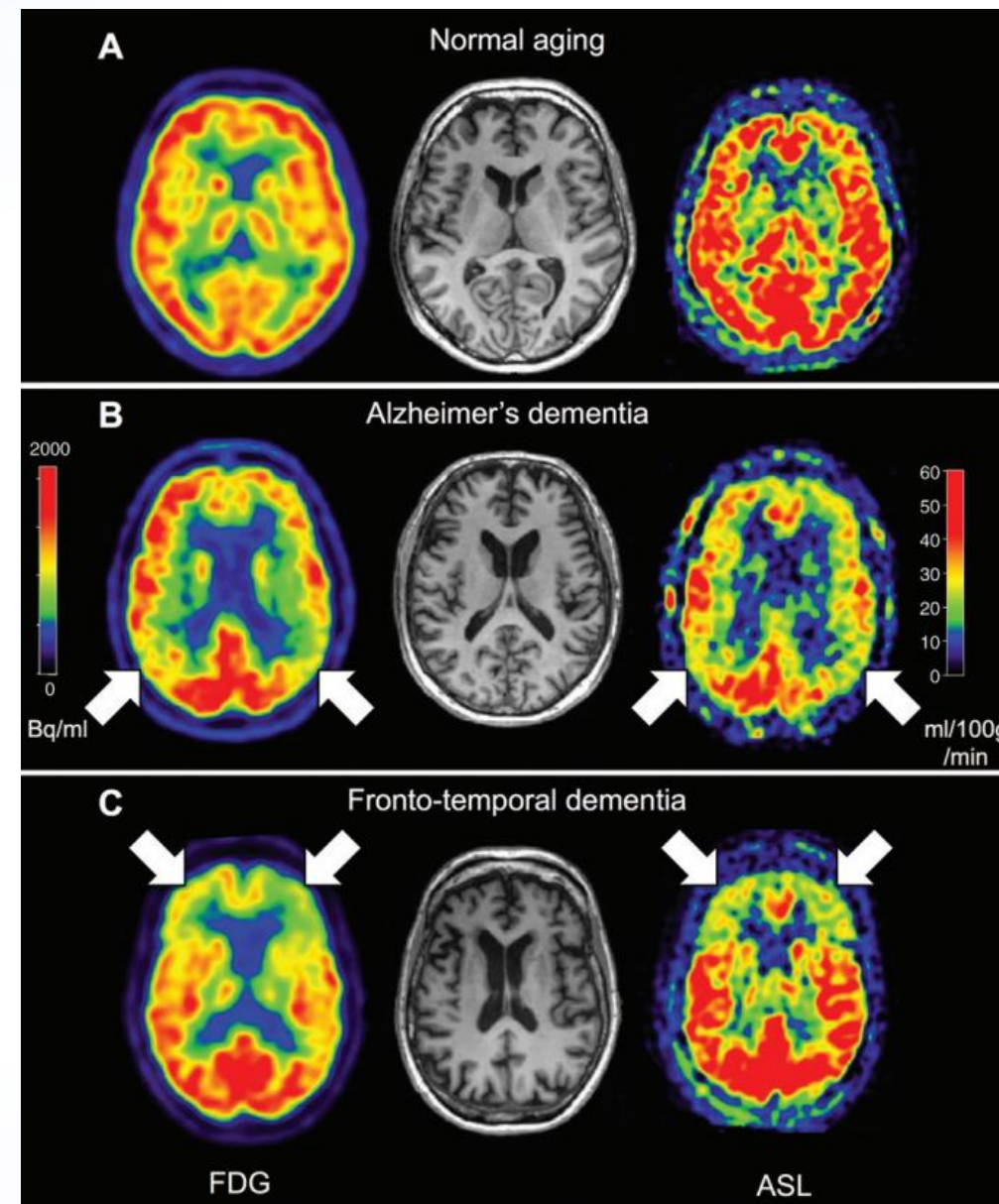
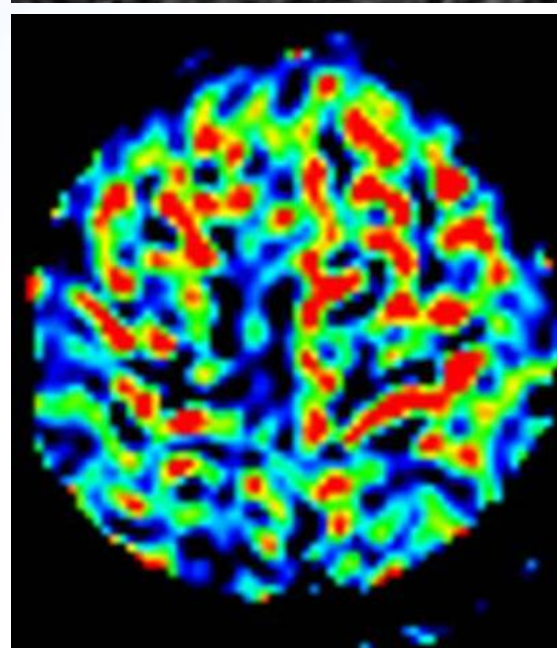
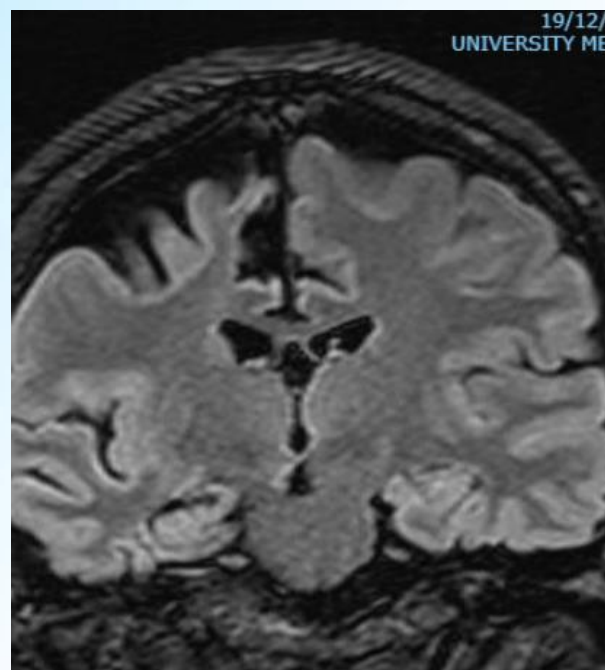
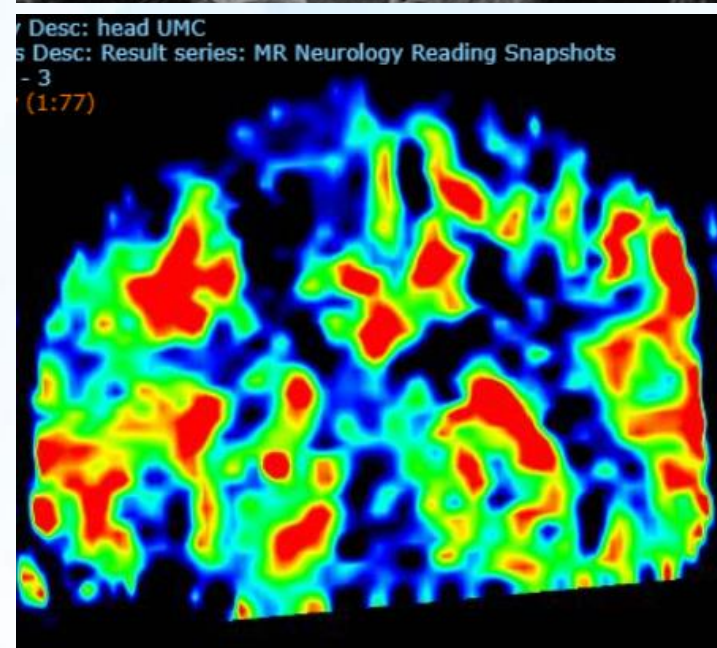
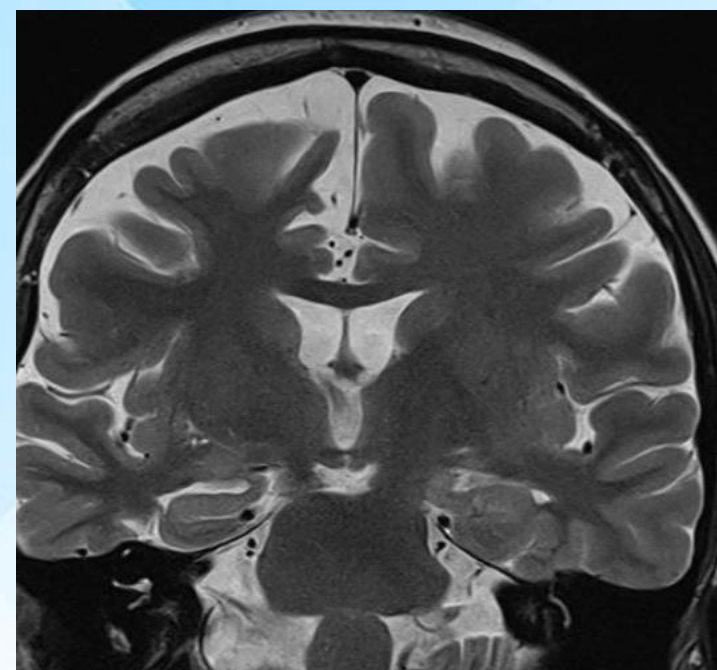


1	Region	Vcsf	Vgm	Vwm
18	Right Hippocampus	0.160219237	3.504340853	0.112489937
19	Left Hippocampus	0.1929172	3.371184301	0.091893905

1	Region	Vcsf	Vgm	Vwm
18	Right Hippocampus	0.700314034	2.636492256	0.249406559
19	Left Hippocampus	0.904748271	2.269113761	0.216489081







Application of diffusion tensor imaging in Alzheimer's disease: quantification of white matter microstructural changes

➤ [Curr Alzheimer Res.](#) 2022;19(6):469-478. doi: 10.2174/1567205019666220718142130.

Application of Diffusion Tensor Imaging Based on Automatic Fiber Quantification in Alzheimer's Disease

Results: There was a significant increase in the MD values in AD patients compared with healthy subjects. The differences were mainly located in the left cingulum hippocampus (HCC), left uncinate fasciculus (UF) and superior longitudinal fasciculus (SLF). The point-wise level of 20 fiber bundles was used as a classification feature, and the MD index exhibited the best performance to distinguish NC from AD.

Conclusion: These findings contribute to the understanding of the pathogenesis of AD and suggest that abnormal white matter based on DTI-based AFQ analysis is helpful to explore the pathogenesis of AD.

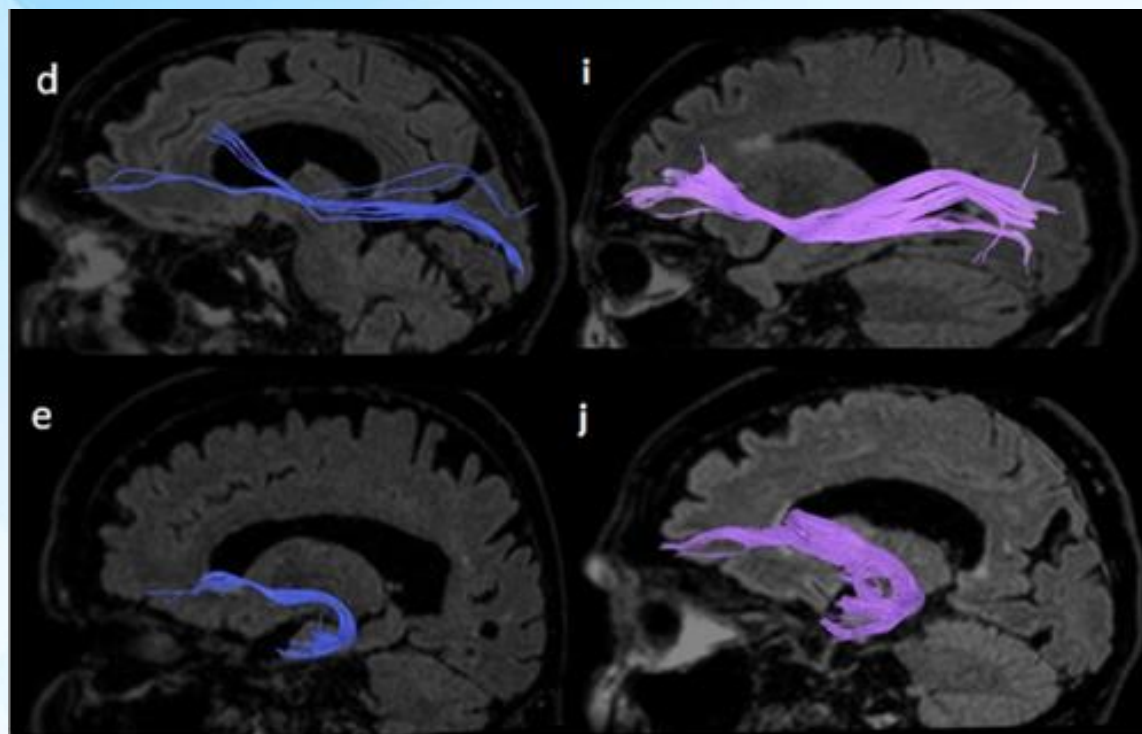
DTI nên được thực hiện ntn ?

- FOV
- Bề dày lát, gap
- Số hướng
- SMS
- Bo, Gradient

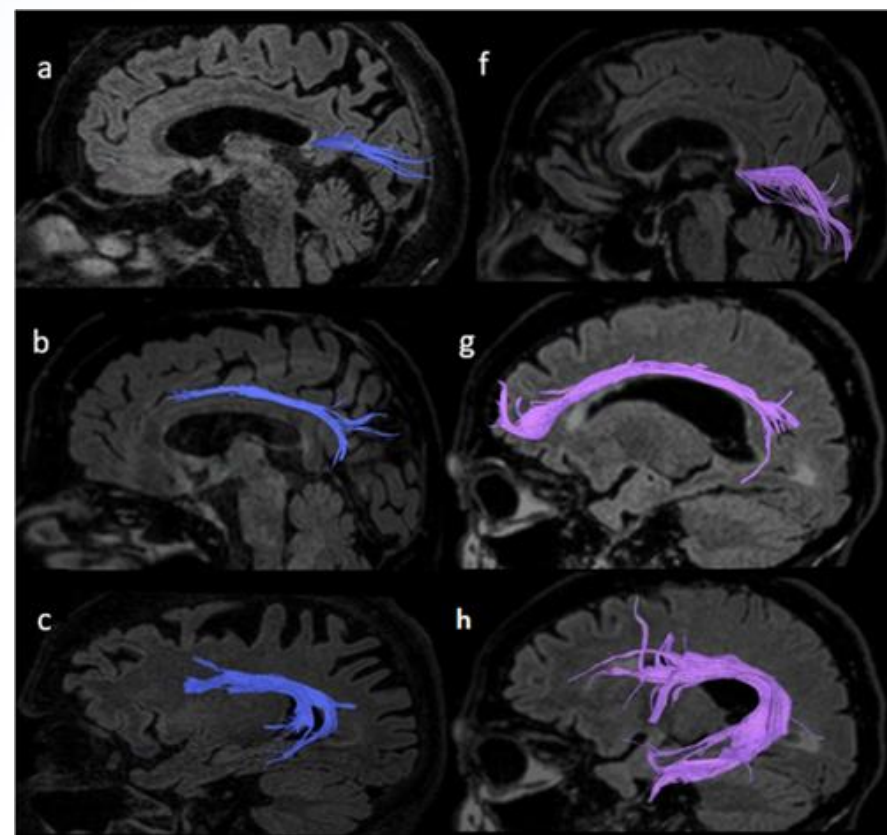
$$S_j = S_0 \exp - b \cdot [\alpha_{xj} \quad \alpha_{yj} \quad \alpha_{zj}] \cdot \begin{bmatrix} D_{xx} & D_{xy} & D_{xz} \\ D_{yx} & D_{yy} & D_{yz} \\ D_{zx} & D_{zy} & D_{zz} \end{bmatrix} \cdot \begin{bmatrix} \alpha_{xj} \\ \alpha_{yj} \\ \alpha_{zj} \end{bmatrix}$$

$$\ln \frac{S_0}{S_j} = b \cdot \begin{bmatrix} (\alpha_{xx}^2)_j \\ (\alpha_{yy}^2)_j \\ (\alpha_{zz}^2)_j \\ (2\alpha_{xy})_j \\ (2\alpha_{xy})_j \\ (2\alpha_{xy})_j \end{bmatrix}^T \cdot \begin{bmatrix} D_{xx} \\ D_{yy} \\ D_{xx} \\ D_{xy} \\ D_{xz} \\ D_{yz} \end{bmatrix}$$

$$Y_{Nx1} = A_{Nx6} \cdot x_{6x1}$$



ID	FA		ADC		TraceW		Anat	
	Mean	SDev	Mean	SDev	Mean	SDev	Mean	SDev
	Size	Min / Max	Size	Min / Max	Size	Min / Max	Size	Min / Max
1	677.7	28.1	656.0	43.4	209.0	1.6	420.9	5.3
	3 / 653 / 717		3 / 605 / 711		3 / 207 / 211		10 / 412 / 430	
2	700.3	49.4	667.0	18.7	236.3	6.1	441.1	8.3
	3 / 633 / 750		3 / 647 / 692		3 / 232 / 245		12 / 427 / 456	
3	867.5	15.5	735.5	2.5	164.5	0.5	472.8	3.3
	2 / 852 / 883		2 / 733 / 738		2 / 164 / 165		4 / 469 / 476	
4	745.0	0.0	652.0	0.0	140.0	0.0	446.3	18.0
	1 / 745 / 745		1 / 652 / 652		1 / 140 / 140		3 / 422 / 465	
5	267.0	0.0	864.0	0.0	157.0	0.0	472.3	5.4
	1 / 267 / 267		1 / 864 / 864		1 / 157 / 157		4 / 465 / 480	



6	742.7	90.4	610.3	40.7	162.0	38.3	457.0	9.2
	3 / 617 / 826		3 / 554 / 649		3 / 126 / 215		4 / 441 / 463	
7	227.3	75.9	659.7	18.2	205.0	6.5	417.9	3.5
	3 / 121 / 293		3 / 634 / 673		3 / 199 / 214		8 / 412 / 422	
8	383.3	226.6	1027.0	365.7	50.2	75.7	123.2	153.5
	307 / 40 / 895		307 / 554 / 2584		973 / 3 / 251		3071 / 0 / 654	
9	462.3	45.3	644.8	13.3	222.5	2.7	411.1	6.2
	4 / 414 / 510		4 / 623 / 659		4 / 219 / 226		9 / 403 / 421	
10	230.7	96.5	710.0	9.3	192.0	5.7	385.1	5.1
	3 / 161 / 370		3 / 701 / 721		3 / 185 / 199		7 / 376 / 383	

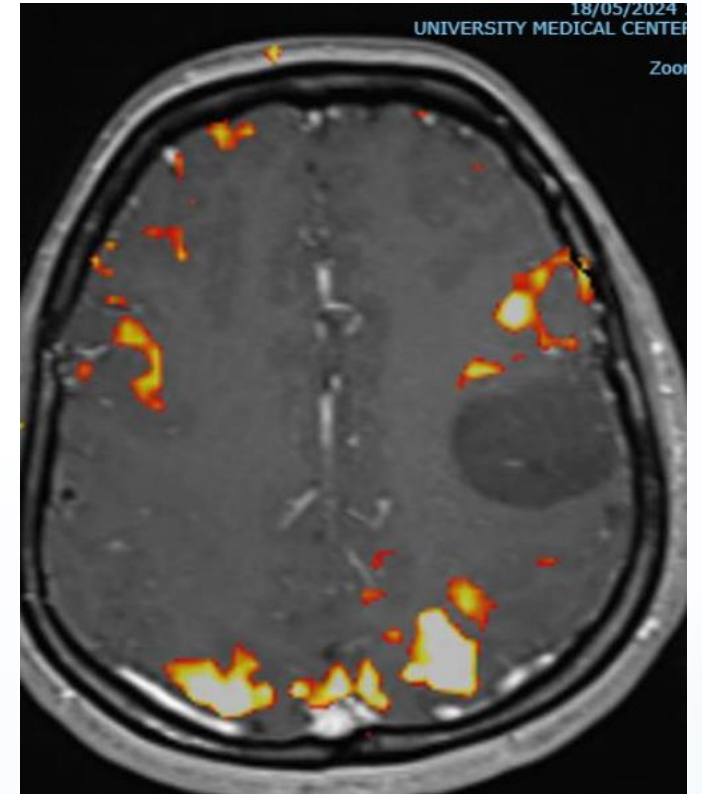
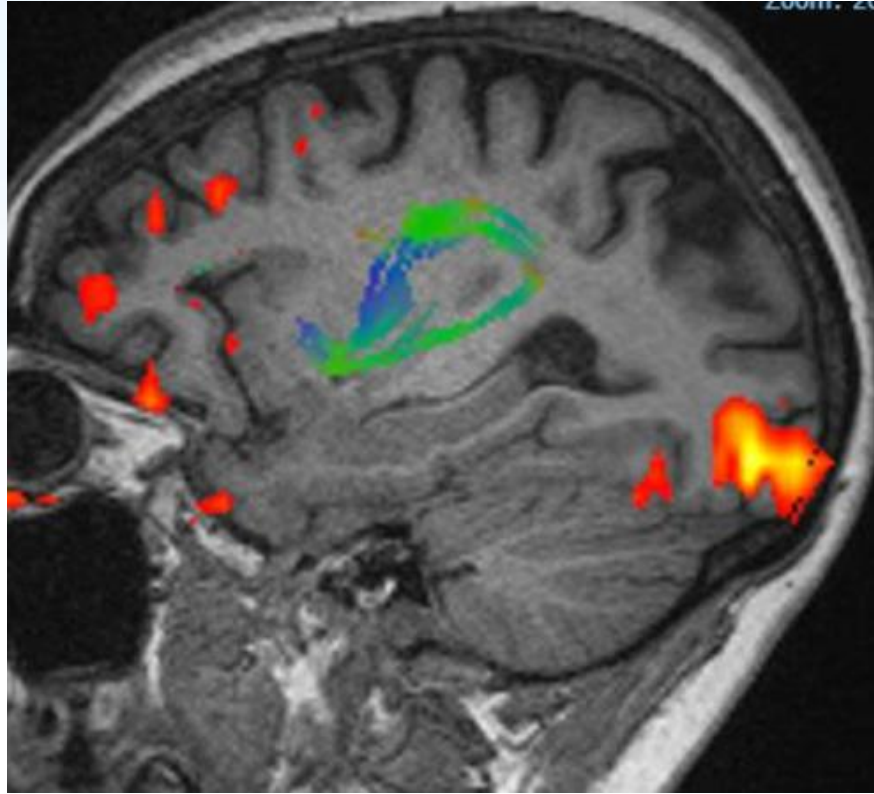
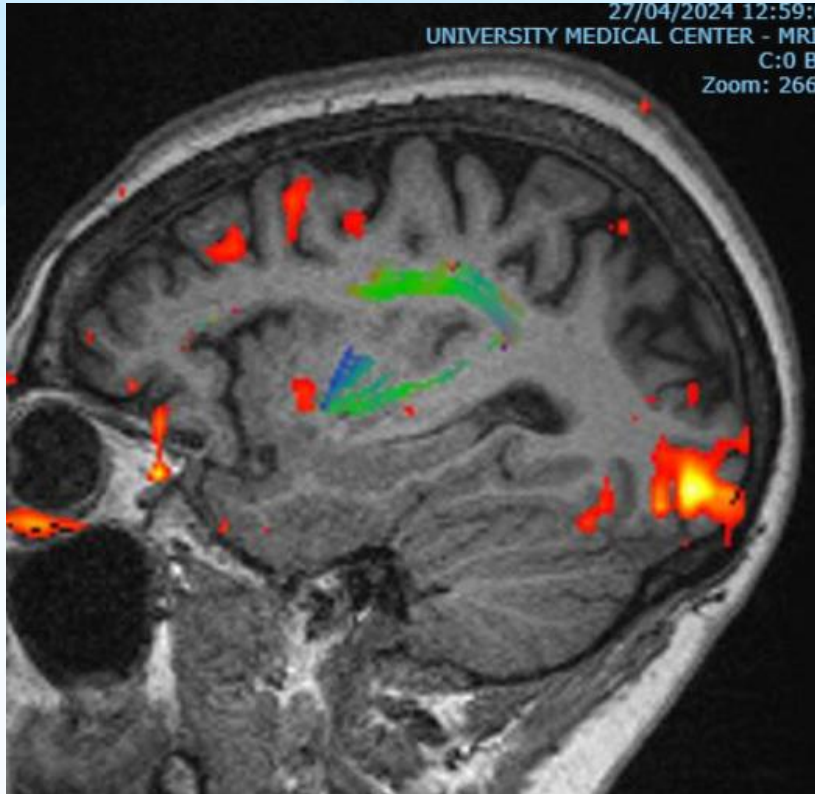
NÊU TÊN CON VẬT (NÓI THẦM)



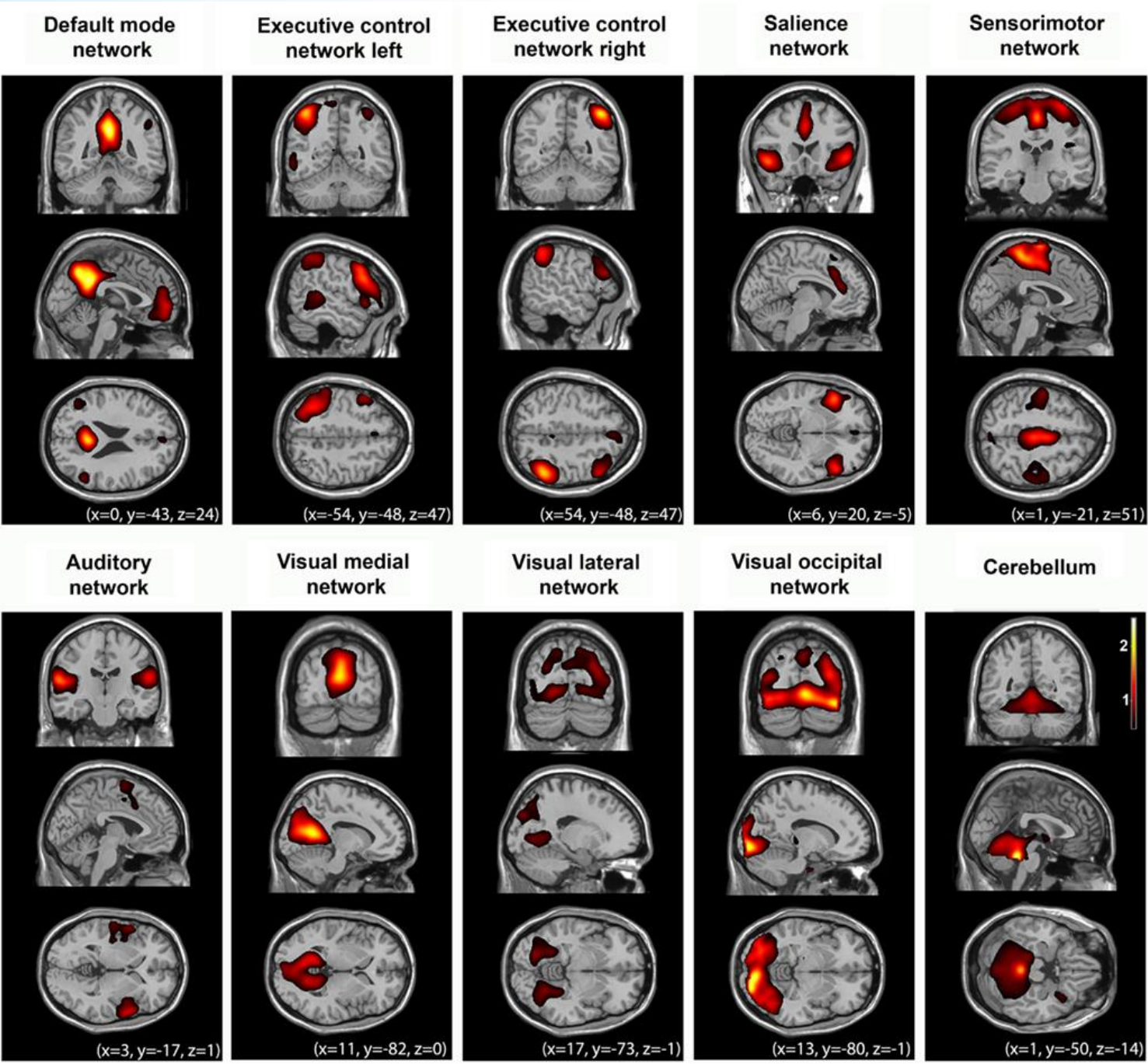
ĐỌC THẦM

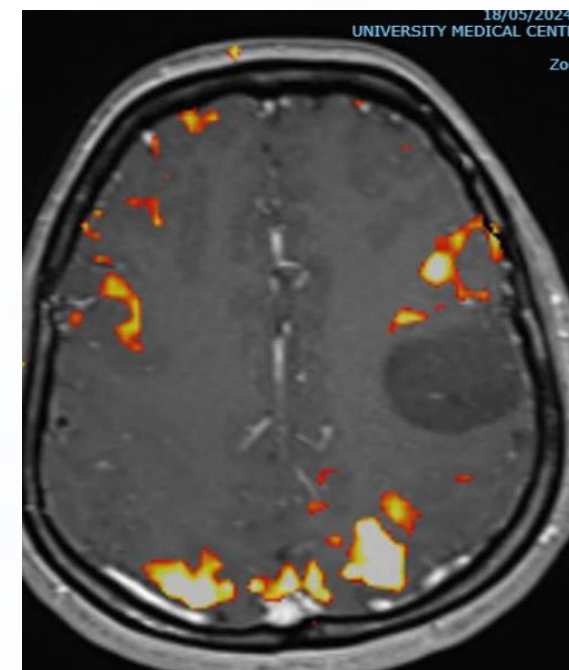
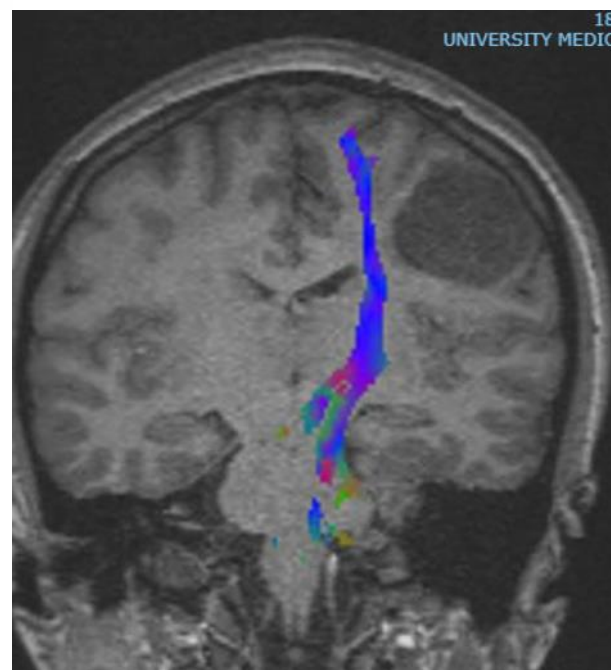
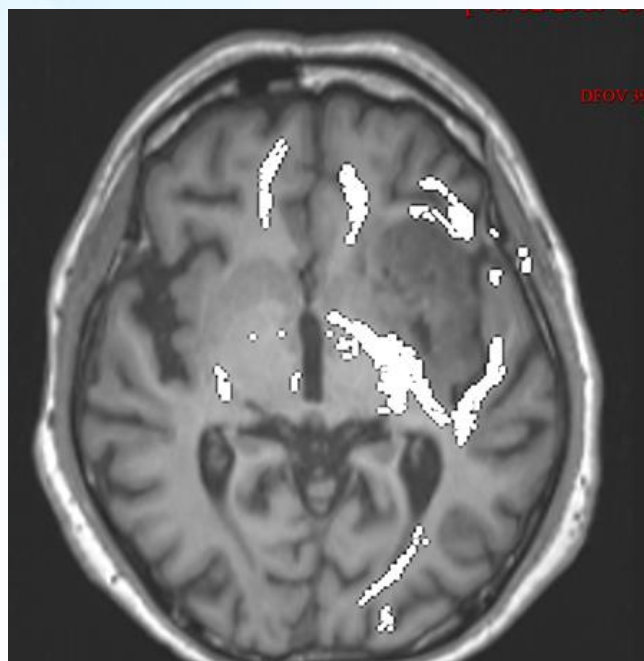
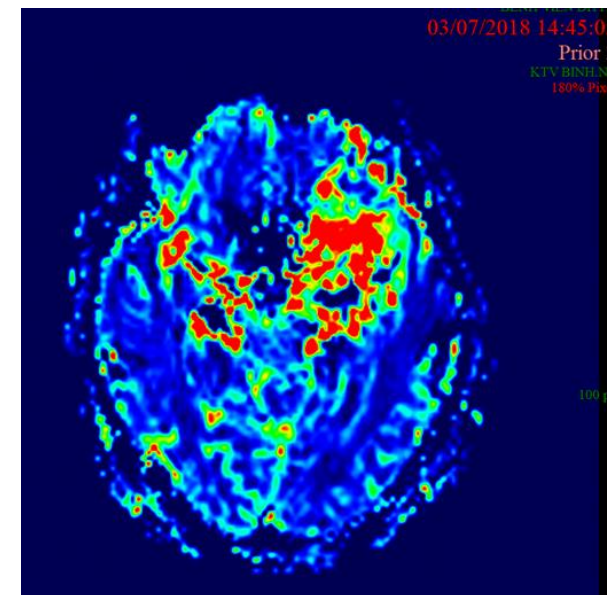
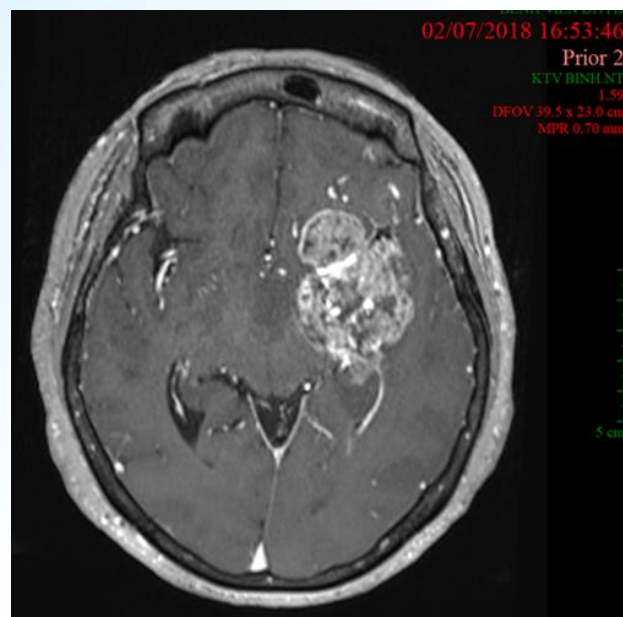
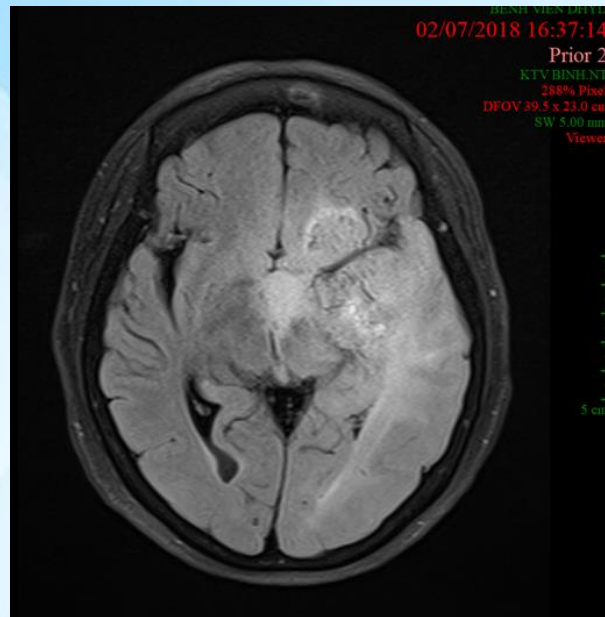
Kho tàng truyện cổ tích Việt Nam như một cánh cửa thần kỳ mở ra một thế giới đầy màu sắc. Tại đây, những bài học quý giá về lòng nhân ái, tình cảm gia đình được đan xen qua từng câu chuyện

Hình ảnh khuếch tán sức năng và CHT chức năng



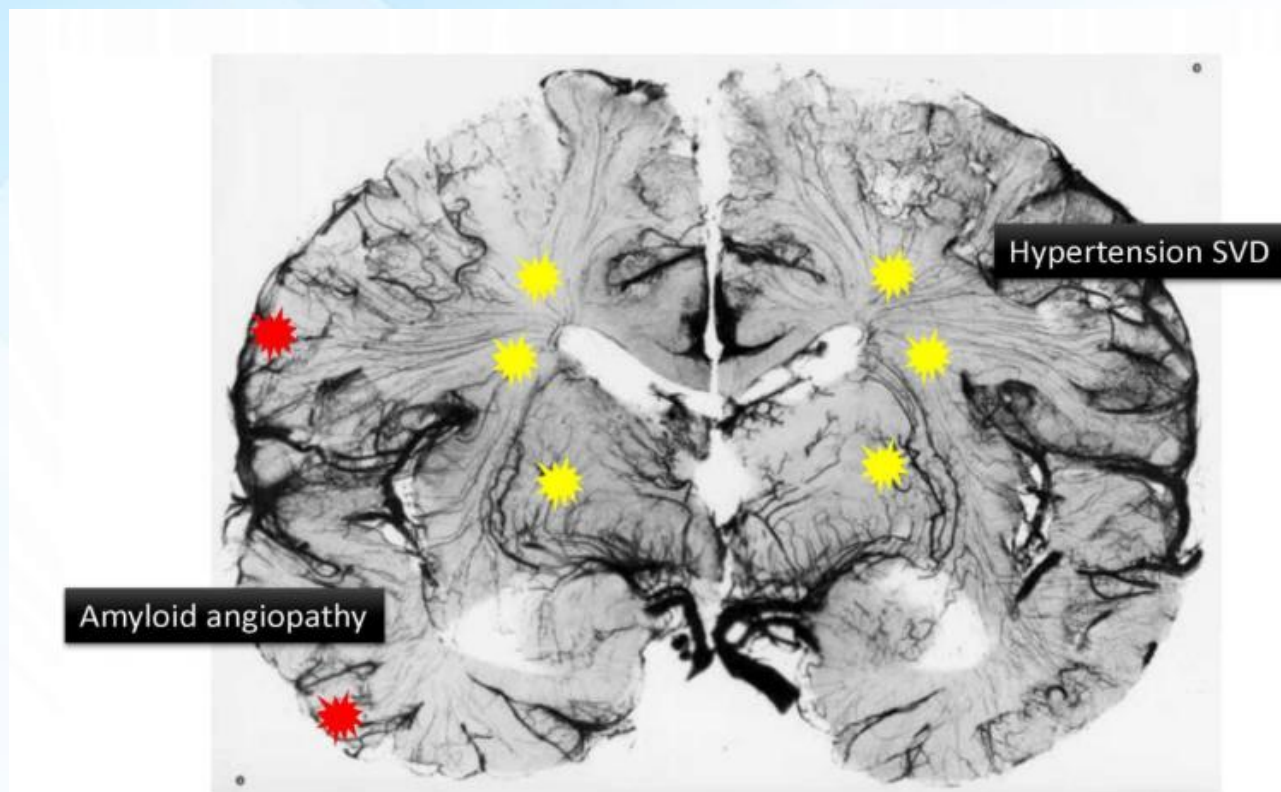
Mặc định(Default mode)
Nổi trội (Salience)
Chú ý (Attention)
Kiểm soát (Control)





Bảng phân độ ARIA trên CHT

Loại ARIA	Nhẹ	Trung bình	Nặng
ARIA-E	Tăng tín hiệu FLAIR giới hạn ở rãnh hoặc vùng vỏ não/dưới vỏ, chất trắng, ở một vị trí <5 cm	Tăng tín hiệu FLAIR kích thước lớn nhất 5-10 cm, hoặc nhiều hơn 1 vị trí tổn thương, mỗi vị trí <10 cm	Tăng tín hiệu FLAIR > 10 cm kèm theo phù não dạng hồi và xóa rãnh. Một hoặc nhiều vị trí tổn thương độc lập.
ARIA-H - Vi xuất huyết	≤ 4 vi xuất huyết mới xuất hiện	5-9 vi xuất huyết mới xuất hiện	≥ 10 vi xuất huyết mới xuất hiện
ARIA-H - Lắng đọng sắt bề mặt	1 vùng lắng đọng sắt bề mặt	2 vùng lắng đọng sắt bề mặt	> 2 vùng lắng đọng sắt bề mặt



Kết luận

CHT trong HC Sa sút trí tuệ

- Xung T1W 3D: teo não (định tính, bán định lượng, **định lượng**)
- T2W/FLAIR: bất thường tín hiệu, não thất, sang thương thứ phát.
- DWI: hạn chế khuếch tán.
- T2*W/SWI: vi xuất huyết
- **DTI**: đo đặc hệ số khuếch tán trung bình, bất đẳng hướng...
- Dòng chảy dịch não tủy.
- CHT phổ: thông tin chuyển hóa các chất
- fMRI: vùng chức năng não





HỘI NGHỊ KHOA HỌC CHẨN ĐOÁN HÌNH ẢNH TP.HCM MỞ RỘNG LẦN THỨ XII-2025



Cảm ơn đã theo dõi!