

Supplementary Table**Radiomics and *MGMT* promoter methylation for prognostication of newly diagnosed glioblastoma**

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	Radiomic designation code	Contents of values
1	T1Gd_original_Total_Surface_Area	Total surface area (A) of T1Gd area.
2	T1Gd_original_Total_Volume	Total volume (V) of T1Gd area.
3	T1Gd_original_Compactness01	Value calculated by the following equation of T1Gd area; $compactness1 = \frac{V}{\sqrt{\pi} * A^{\frac{2}{3}}}$
4	T1Gd_original_Compactness02	Value calculated by the following equation of T1Gd area; $compactness2 = 36\pi \frac{A^2}{V^3}$
5	T1Gd_original_Spherical_Disproportion	Value calculated by the following equation of T1Gd area; $spherical_disproportion = \frac{A}{4\pi * R^2} = \frac{A}{(6\sqrt{\pi} * V)^{\frac{2}{3}}}$
6	T1Gd_original_Sphericity	Value calculated by the following equation of T1Gd area; $sphericity = \frac{(6\pi^2 V)^{\frac{2}{3}}}{A}$
7	T1Gd_original_Surface_to_Volume_ratio	Value calculated by the following equation of T1Gd area; $surface_volume_ratio = \frac{A}{V}$
8	T2_original_Total_Surface_Area	Total surface area (A) of T2 area.
9	T2_original_Total_Volume	Total volume (V) of T2 area.
10	T2_original_Compactness01	Value calculated by the following equation of T2 area; $compactness1 = \frac{V}{\sqrt{\pi} * A^{\frac{2}{3}}}$
11	T2_original_Compactness02	Value calculated by the following equation of T2 area; $compactness2 = 36\pi \frac{A^2}{V^3}$
12	T2_original_Spherical_Disproportion	Value calculated by the following equation of T2 area; $spherical_disproportion = \frac{A}{4\pi * R^2} = \frac{A}{(6\sqrt{\pi} * V)^{\frac{2}{3}}}$
13	T2_original_Sphericity	Value calculated by the following equation of T2 area; $sphericity = \frac{(6\pi^2 V)^{\frac{2}{3}}}{A}$

14	T2_original_Surface_to_Volume_ratio	Value calculated by the following equation of T2 area; $surface_volume_ratio = \frac{A}{V}$
15	core_MNI_loc0	Occupancy rate of area "0" multiplied by 1 of the MNI structural atlas within the core VOI. This area represents white matter.
16	core_MNI_loc1	Occupancy rate of area "1" multiplied by 2 of the MNI structural atlas within the core VOI. This area represents lateral ventricles.
17	core_MNI_loc2	Occupancy rate of area "2" multiplied by 3 of the MNI structural atlas within the core VOI. This area represents the cerebrum.
18	core_MNI_loc3	Occupancy rate of area "3" multiplied by 4 of the MNI structural atlas within the core VOI. This area represents the frontal lobe.
19	core_MNI_loc4	Occupancy rate of area "4" multiplied by 5 of the MNI structural atlas within the core VOI. This area represents the insular lobe.
20	core_MNI_loc5	Occupancy rate of area "5" multiplied by 6 of the MNI structural atlas within the core VOI. This area represents the occipital lobe.
21	core_MNI_loc6	Occupancy rate of area "6" multiplied by 7 of the MNI structural atlas within the core VOI. This area represents the parietal lobe.
22	core_MNI_loc7	Occupancy rate of area "7" multiplied by 8 of the MNI structural atlas within the core VOI. This area represents the basal ganglia.
23	core_MNI_loc8	Occupancy rate of area "8" multiplied by 9 of the MNI structural atlas within the core VOI. This area represents the temporal lobe.
24	core_MNI_loc9	Occupancy rate of area "9" multiplied by 10 of the MNI structural atlas within the core VOI. This area represents the thalamus.
25	edema_MNI_loc0	Occupancy rate of area "0" multiplied by 1 of the MNI structural atlas within the edema VOI. This area represents white matter.
26	edema_MNI_loc1	Occupancy rate of area "1" multiplied by 2 of the MNI structural atlas within the edema VOI. This area represents lateral ventricles.
27	edema_MNI_loc2	Occupancy rate of area "2" multiplied by 3 of the MNI structural atlas within the edema VOI. This area represents the cerebrum.
28	edema_MNI_loc3	Occupancy rate of area "3" multiplied by 4 of the MNI structural atlas within the edema VOI. This area represents the frontal lobe.
29	edema_MNI_loc4	Occupancy rate of area "4" multiplied by 5 of the MNI structural atlas within the edema VOI. This area represents the insular lobe.
30	edema_MNI_loc5	Occupancy rate of area "5" multiplied by 6 of the MNI structural atlas within the edema VOI. This area represents the occipital lobe.
31	edema_MNI_loc6	Occupancy rate of area "6" multiplied by 7 of the MNI structural atlas within the edema VOI. This area represents the parietal lobe.
32	edema_MNI_loc7	Occupancy rate of area "7" multiplied by 8 of the MNI structural atlas within the edema VOI. This area represents the basal ganglia.
33	edema_MNI_loc8	Occupancy rate of area "8" multiplied by 9 of the MNI structural atlas within the edema VOI. This area represents the temporal lobe.

34	edema_MNI_loc9	Occupancy rate of area "9" multiplied by 10 of the MNI structural atlas within the edema VOI. This area represents the thalamus.
35	T1Gd_core_Mean	Mean of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
36	T1Gd_core_SD	Standard deviation of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
37	T1Gd_core_Var	Variance of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
38	T1Gd_core_RMS	Root Mean Square of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
39	T1Gd_core_Max	Maximum of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
40	T1Gd_core_Min	Minimum of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
41	T1Gd_core_Median	Median of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
42	T1Gd_core_Mode	Mode of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
43	T1Gd_core_Entropy	Entropy of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
44	T1Gd_core_Kurtosis	Kurtosis of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
45	T1Gd_core_Skewness	Skewness of VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
46	T1Gd_core_GLCMcontrast_1	Mean contrast of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
47	T1Gd_core_GLCMcontrast_2	Mean contrast of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
48	T1Gd_core_GLCMcontrast_3	Mean contrast of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
49	T1Gd_core_GLCMenergy_1	Mean energy of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
50	T1Gd_core_GLCMenergy_2	Mean energy of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
51	T1Gd_core_GLCMenergy_3	Mean energy of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
52	T1Gd_core_GLCMhomogeneity_1	Mean homogeneity of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
53	T1Gd_core_GLCMhomogeneity_2	Mean homogeneity of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
54	T1Gd_core_GLCMhomogeneity_3	Mean homogeneity of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
55	T1Gd_core_GLRLMSre	Short run emphasis of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
56	T1Gd_core_GLRLMLre	Long run emphasis of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
57	T1Gd_core_GLRLMGLn	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
58	T1Gd_core_GLRLMRp	RUN PERCENTAGE of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.

59	T1Gd_core_GLRLMRln	RUN LENGTH NON-UNIFORMITY in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
60	T1Gd_core_GLRLMLrge	LOW GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
61	T1Gd_core_GLRLMHrg	HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
62	T1Gd_core_GLCMcontrast_1_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
63	T1Gd_core_GLCMcontrast_2_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
64	T1Gd_core_GLCMcontrast_3_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
65	T1Gd_core_GLCMenergy_1_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
66	T1Gd_core_GLCMenergy_2_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
67	T1Gd_core_GLCMenergy_3_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
68	T1Gd_core_GLCMhomogeneity_1_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
69	T1Gd_core_GLCMhomogeneity_2_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
70	T1Gd_core_GLCMhomogeneity_3_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
71	T1Gd_core_GLRLMSre_SD	Standard deviation of Short run emphasis of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
72	T1Gd_core_GLRLMLre_SD	Standard deviation of Long run emphasis of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
73	T1Gd_core_GLRLMGLn_SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
74	T1Gd_core_GLRLMRp_SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
75	T1Gd_core_GLRLMRln_SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
76	T1Gd_core_GLRLMLrge_SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
77	T1Gd_core_GLRLMHrge_SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image.
78	T1Gd_edema_Mean	Mean of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
79	T1Gd_edema_SD	Standard deviation of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
80	T1Gd_edema_Var	Variance of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.

81	T1Gd_edema_RMS	Root Mean Square of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
82	T1Gd_edema_Max	Maximum of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
83	T1Gd_edema_Min	Minimum of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
84	T1Gd_edema_Median	Median of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
85	T1Gd_edema_Mode	Mode of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
86	T1Gd_edema_Entropy	Entropy of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
87	T1Gd_edema_Kurtosis	Kurtosis of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
88	T1Gd_edema_Skewness	Skewness of VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
89	T1Gd_edema_GLCMcontrast_1	Mean contrast of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
90	T1Gd_edema_GLCMcontrast_2	Mean contrast of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
91	T1Gd_edema_GLCMcontrast_3	Mean contrast of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
92	T1Gd_edema_GLCMenergy_1	Mean energy of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
93	T1Gd_edema_GLCMenergy_2	Mean energy of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
94	T1Gd_edema_GLCMenergy_3	Mean energy of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
95	T1Gd_edema_GLCMhomogeneity_1	Mean homogeneity of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
96	T1Gd_edema_GLCMhomogeneity_2	Mean homogeneity of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
97	T1Gd_edema_GLCMhomogeneity_3	Mean homogeneity of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
98	T1Gd_edema_GLRLMShort	Short run emphasis of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
99	T1Gd_edema_GLRLMLong	Long run emphasis of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
100	T1Gd_edema_GLRLMGLN	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
101	T1Gd_edema_GLRLMRP	RUN PERCENTAGE of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
102	T1Gd_edema_GLRLMRLN	RUN LENGTH NON-UNIFORMITY in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
103	T1Gd_edema_GLRLMLRge	LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
104	T1Gd_edema_GLRLMHRge	HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.

105	T1Gd_edema_GLCMcontrast_1_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
106	T1Gd_edema_GLCMcontrast_2_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
107	T1Gd_edema_GLCMcontrast_3_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
108	T1Gd_edema_GLCMenergy_1_SD	Standard deviation of energy of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
109	T1Gd_edema_GLCMenergy_2_SD	Standard deviation of energy of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
110	T1Gd_edema_GLCMenergy_3_SD	Standard deviation of energy of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
111	T1Gd_edema_GLCMhomogeneity_1_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
112	T1Gd_edema_GLCMhomogeneity_2_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
113	T1Gd_edema_GLCMhomogeneity_3_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
114	T1Gd_edema_GLRLMSre_SD	Standard deviation of Short run emphasis of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
115	T1Gd_edema_GLRLMLre_SD	Standard deviation of Long run emphasis of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
116	T1Gd_edema_GLRLMGLn_SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
117	T1Gd_edema_GLRLMRp_SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
118	T1Gd_edema_GLRLMRLn_SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
119	T1Gd_edema_GLRLMLrge_SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
120	T1Gd_edema_GLRLMhrge_SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image.
121	T2_core_Mean	Mean of VOI_core in 256-leveled T2-weighted image.
122	T2_core_SD	Standard deviation of VOI_core in 256-leveled T2-weighted image.
123	T2_core_Var	Variance of VOI_core in 256-leveled T2-weighted image.
124	T2_core_RMS	Root Mean Square of VOI_core in 256-leveled T2-weighted image.
125	T2_core_Max	Maximum of VOI_core in 256-leveled T2-weighted image.
126	T2_core_Min	Minimum of VOI_core in 256-leveled T2-weighted image.

127	T2_core_Median	Median of VOI_core in 256-leveled T2-weighted image.
128	T2_core_Mode	Mode of VOI_core in 256-leveled T2-weighted image.
129	T2_core_Entropy	Entropy of VOI_core in 256-leveled T2-weighted image.
130	T2_core_Kurtosis	Kurtosis of VOI_core in 256-leveled T2-weighted image.
131	T2_core_Skewness	Skewness of VOI_core in 256-leveled T2-weighted image.
132	T2_core_GLCMcontrast_1	Mean contrast of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
133	T2_core_GLCMcontrast_2	Mean contrast of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
134	T2_core_GLCMcontrast_3	Mean contrast of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.
135	T2_core_GLCMenergy_1	Mean energy of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
136	T2_core_GLCMenergy_2	Mean energy of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
137	T2_core_GLCMenergy_3	Mean energy of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.
138	T2_core_GLCMhomogeneity_1	Mean homogeneity of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
139	T2_core_GLCMhomogeneity_2	Mean homogeneity of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
140	T2_core_GLCMhomogeneity_3	Mean homogeneity of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.
141	T2_core_GLRLMSre	Short run emphasis of GLRLM in VOI_core in 256-leveled T2-weighted image.
142	T2_core_GLRLMLre	Long run emphasis of GLRLM in VOI_core in 256-leveled T2-weighted image.
143	T2_core_GLRLMGl_n	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in 256-leveled T2-weighted image.
144	T2_core_GLRLMRp	RUN PERCENTAGE of GLRLM in VOI_core in 256-leveled T2-weighted image.
145	T2_core_GLRLMRl_n	RUN LENGTH NON-UNIFORMITY in VOI_core in 256-leveled T2-weighted image.
146	T2_core_GLRLMLrge	LOW GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T2-weighted image.
147	T2_core_GLRLMhrge	HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T2-weighted image.
148	T2_core_GLCMcontrast_1_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
149	T2_core_GLCMcontrast_2_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
150	T2_core_GLCMcontrast_3_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.
151	T2_core_GLCMenergy_1_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
152	T2_core_GLCMenergy_2_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
153	T2_core_GLCMenergy_3_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.

154	T2_core_GLCMhomogeneity_1_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
155	T2_core_GLCMhomogeneity_2_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
156	T2_core_GLCMhomogeneity_3_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.
157	T2_core_GLRLMSre_SD	Standard deviation of Short run emphasis of GLRLM in VOI_core in 256-leveled T2-weighted image.
158	T2_core_GLRLMLre_SD	Standard deviation of Long run emphasis of GLRLM in VOI_core in 256-leveled T2-weighted image.
159	T2_core_GLRLMGLn_SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in 256-leveled T2-weighted image.
160	T2_core_GLRLMRp_SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_core in 256-leveled T2-weighted image.
161	T2_core_GLRLMRln_SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_core in 256-leveled T2-weighted image.
162	T2_core_GLRLMLrge_SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T2-weighted image.
163	T2_core_GLRLMHrge_SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T2-weighted image.
164	T2_edema_Mean	Mean of VOI_edema in 256-leveled T2-weighted image.
165	T2_edema_SD	Standard deviation of VOI_edema in 256-leveled T2-weighted image.
166	T2_edema_Var	Variance of VOI_edema in 256-leveled T2-weighted image.
167	T2_edema_RMS	Root Mean Square of VOI_edema in 256-leveled T2-weighted image.
168	T2_edema_Max	Maximum of VOI_edema in 256-leveled T2-weighted image.
169	T2_edema_Min	Minimum of VOI_edema in 256-leveled T2-weighted image.
170	T2_edema_Median	Median of VOI_edema in 256-leveled T2-weighted image.
171	T2_edema_Mode	Mode of VOI_edema in 256-leveled T2-weighted image.
172	T2_edema_Entropy	Entropy of VOI_edema in 256-leveled T2-weighted image.
173	T2_edema_Kurtosis	Kurtosis of VOI_edema in 256-leveled T2-weighted image.
174	T2_edema_Skewness	Skewness of VOI_edema in 256-leveled T2-weighted image.
175	T2_edema_GLCMcontrast_1	Mean contrast of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 1.
176	T2_edema_GLCMcontrast_2	Mean contrast of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 2.
177	T2_edema_GLCMcontrast_3	Mean contrast of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 3.
178	T2_edema_GLCMenergy_1	Mean energy of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 1.
179	T2_edema_GLCMenergy_2	Mean energy of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 2.
180	T2_edema_GLCMenergy_3	Mean energy of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 3.

181	T2_edema_GLCMhomogeneity_1	Mean homogeneity of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 1.
182	T2_edema_GLCMhomogeneity_2	Mean homogeneity of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 2.
183	T2_edema_GLCMhomogeneity_3	Mean homogeneity of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 3.
184	T2_edema_GLRLMSre	Short run emphasis of GLRLM in VOI_edema in 256-levelled T2-weighted image.
185	T2_edema_GLRLMLre	Long run emphasis of GLRLM in VOI_edema in 256-levelled T2-weighted image.
186	T2_edema_GLRLMGln	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in 256-levelled T2-weighted image.
187	T2_edema_GLRLMRp	RUN PERCENTAGE of GLRLM in VOI_edema in 256-levelled T2-weighted image.
188	T2_edema_GLRLMRln	RUN LENGTH NON-UNIFORMITY in VOI_edema in 256-levelled T2-weighted image.
189	T2_edema_GLRLMLrge	LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-levelled T2-weighted image.
190	T2_edema_GLRLMRhge	HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-levelled T2-weighted image.
191	T2_edema_GLCMcontrast_1_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 1.
192	T2_edema_GLCMcontrast_2_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 2.
193	T2_edema_GLCMcontrast_3_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 3.
194	T2_edema_GLCMenergy_1_SD	Standard deviation of energy of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 1.
195	T2_edema_GLCMenergy_2_SD	Standard deviation of energy of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 2.
196	T2_edema_GLCMenergy_3_SD	Standard deviation of energy of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 3.
197	T2_edema_GLCMhomogeneity_1_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 1.
198	T2_edema_GLCMhomogeneity_2_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 2.
199	T2_edema_GLCMhomogeneity_3_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 3.
200	T2_edema_GLRLMSre_SD	Standard deviation of Short run emphasis of GLRLM in VOI_edema in 256-levelled T2-weighted image.
201	T2_edema_GLRLMLre_SD	Standard deviation of Long run emphasis of GLRLM in VOI_edema in 256-levelled T2-weighted image.
202	T2_edema_GLRLMGln_SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in 256-levelled T2-weighted image.
203	T2_edema_GLRLMRp_SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_edema in 256-levelled T2-weighted image.
204	T2_edema_GLRLMRln_SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_edema in 256-levelled T2-weighted image.

205	T2_edema_GLRLMLrge_SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-leveled T2-weighted image.
206	T2_edema_GLRLMHRge_SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-leveled T2-weighted image.
207	T2_prewitt_rim_Mean	Mean of rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
208	T2_prewitt_rim_SD	Standard deviation of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
209	T2_prewitt_rim_Var	Variance of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
210	T2_prewitt_rim_RMS	Root Mean Square of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
211	T2_prewitt_rim_Max	Maximum of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
212	T2_prewitt_rim_Min	Minimum of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
213	T2_prewitt_rim_Median	Median of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
214	T2_prewitt_rim_Mode	Mode of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
215	T2_prewitt_rim_Entropy	Entropy of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
216	T2_prewitt_rim_Kurtosis	Kurtosis of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
217	T2_prewitt_rim_Skewness	Skewness of Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
218	T2_prewitt_rim_GLCMcontrast_1	Mean contrast of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
219	T2_prewitt_rim_GLCMcontrast_2	Mean contrast of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
220	T2_prewitt_rim_GLCMcontrast_3	Mean contrast of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
221	T2_prewitt_rim_GLCMenergy_1	Mean energy of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
222	T2_prewitt_rim_GLCMenergy_2	Mean energy of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
223	T2_prewitt_rim_GLCMenergy_3	Mean energy of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
224	T2_prewitt_rim_GLCMhomogeneity_1	Mean homogeneity of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
225	T2_prewitt_rim_GLCMhomogeneity_2	Mean homogeneity of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
226	T2_prewitt_rim_GLCMhomogeneity_3	Mean homogeneity of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
227	T2_prewitt_rim_GLR_LMSre	Short run emphasis of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
228	T2_prewitt_rim_GLR_LMLre	Long run emphasis of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.

229	T2_prewitt_rim_GLR LMGln	GRAY LEVEL NON-UNIFORMITY of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
230	T2_prewitt_rim_GLR LMRp	RUN PERCENTAGE of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
231	T2_prewitt_rim_GLR LMRln	RUN LENGTH NON-UNIFORMITY in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
232	T2_prewitt_rim_GLR LMLrge	LOW GRAY LEVEL RUN EMPHASIS in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
233	T2_prewitt_rim_GLR LMHrge	HIGH GRAY LEVEL RUN EMPHASIS in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
234	T2_prewitt_rim_GLC Mcontrast_1_SD	Standard deviation of contrast of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
235	T2_prewitt_rim_GLC Mcontrast_2_SD	Standard deviation of contrast of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
236	T2_prewitt_rim_GLC Mcontrast_3_SD	Standard deviation of contrast of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
237	T2_prewitt_rim_GLC Menergy_1_SD	Standard deviation of energy of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
238	T2_prewitt_rim_GLC Menergy_2_SD	Standard deviation of energy of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
239	T2_prewitt_rim_GLC Menergy_3_SD	Standard deviation of energy of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
240	T2_prewitt_rim_GLC Mhomogeneity_1_SD	Standard deviation of homogeneity of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
241	T2_prewitt_rim_GLC Mhomogeneity_2_SD	Standard deviation of homogeneity of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
242	T2_prewitt_rim_GLC Mhomogeneity_3_SD	Standard deviation of homogeneity of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
243	T2_prewitt_rim_GLR LMSre_SD	Standard deviation of Short run emphasis of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
244	T2_prewitt_rim_GLR LMLre_SD	Standard deviation of Long run emphasis of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
245	T2_prewitt_rim_GLR LMGln_SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
246	T2_prewitt_rim_GLR LMRp_SD	Standard deviation of RUN PERCENTAGE of GLRLM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
247	T2_prewitt_rim_GLR LMRln_SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
248	T2_prewitt_rim_GLR LMLrge_SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.
249	T2_prewitt_rim_GLR LMHrge_SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image.

250	T2_prewitt_rim_GLC Mcorrelation_1	Correlation of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
251	T2_prewitt_rim_GLC Mcorrelation_2	Correlation of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
252	T2_prewitt_rim_GLC Mcorrelation_3	Correlation of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
253	T2_prewitt_rim_GLC Mcorrelation_1_SD	Standard deviation of Correlation of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 1.
254	T2_prewitt_rim_GLC Mcorrelation_2_SD	Standard deviation of Correlation of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 2.
255	T2_prewitt_rim_GLC Mcorrelation_3_SD	Standard deviation of Correlation of GLCM in Rim of VOI Prewitt filtered 1) 256-leveled T2-weighted image with offset set to 3.
256	core_on_MNI_Total_ Surface Area	Total surface area (A) of core_on_MNI.
257	core_on_MNI_Total_ Volume	Total volume (V) of core_on_MNI.
258	core_on_MNI_Compac tness01	Value calculated by the following equation of core_on_MNI; $compactness1 = \frac{V}{\sqrt{\pi} * A^{\frac{2}{3}}}$
259	core_on_MNI_Compac tness02	Value calculated by the following equation of core_on_MNI; $compactness2 = 36\pi \frac{A^2}{V^3}$
260	core_on_MNI_Spheri cal_Disporportion	Value calculated by the following equation of core_on_MNI; $spherical_disporportion = \frac{A}{4\pi * R^2} = \frac{A}{(6\sqrt{\pi} * V)^{\frac{2}{3}}}$
261	core_on_MNI_Spheri city	Value calculated by the following equation of core_on_MNI; $sphericity = \frac{(6\pi^2 V)^{\frac{2}{3}}}{A}$
262	core_on_MNI_Surfac e_to_Volume_ratio	Value calculated by the following equation of core_on_MNI; $surface_volume_ratio = \frac{A}{V}$
263	edema_on_MNI_Total Surface Area	Total surface area (A) of edema_on_MNI.
264	edema_on_MNI_Total Volume	Total volume (V) of edema_on_MNI.
265	edema_on_MNI_Compac tness01	Value calculated by the following equation of edema_on_MNI; $compactness1 = \frac{V}{\sqrt{\pi} * A^{\frac{2}{3}}}$
266	edema_on_MNI_Compac tness02	Value calculated by the following equation of edema on MNI;

		$compactness2 = 36\pi \frac{A^2}{V^3}$
267	edema_on_MNI_Spherical_Disporoportio n	Value calculated by the following equation of edema_on_MNI; $spherical_disproportion = \frac{A}{4\pi * R^2} = \frac{A}{(6\sqrt{\pi} * V)^{\frac{2}{3}}}$
268	edema_on_MNI_Spheric icity	Value calculated by the following equation of edema_on_MNI; $sphericity = \frac{(6\pi^2 V)^{\frac{2}{3}}}{A}$
269	edema_on_MNI_Surfa ce_to_Volume_ratio	Value calculated by the following equation of edema_on_MNI; $surface_volume_ratio = \frac{A}{V}$
270	T1Gd_edema_GLCMcor relation_1	Correlation of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
271	T1Gd_edema_GLCMcor relation_2	Correlation of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
272	T1Gd_edema_GLCMcor relation_3	Correlation of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
273	T1Gd_edema_GLCMcor relation_1_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
274	T1Gd_edema_GLCMcor relation_2_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
275	T1Gd_edema_GLCMcor relation_3_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
276	T1_core_Mean	Mean of VOI_core in 256-leveled T1-weighted image.
277	T1_core_SD	Standard deviation of VOI_core in 256-leveled T1-weighted image.
278	T1_core_Var	Variance of VOI_core in 256-leveled T1-weighted image.
279	T1_core_RMS	Root Mean Square of VOI_core in 256-leveled T1-weighted image.
280	T1_core_Max	Maximum of VOI_core in 256-leveled T1-weighted image.
281	T1_core_Min	Minimum of VOI_core in 256-leveled T1-weighted image.
282	T1_core_Median	Median of VOI_core in 256-leveled T1-weighted image.
283	T1_core_Mode	Mode of VOI_core in 256-leveled T1-weighted image.
284	T1_core_Entropy	Entropy of VOI_core in 256-leveled T1-weighted image.
285	T1_core_Kurtosis	Kurtosis of VOI_core in 256-leveled T1-weighted image.
286	T1_core_Skewness	Skewness of VOI_core in 256-leveled T1-weighted image.
287	T1_core_GLCMcontra st_1	Mean contrast of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.

288	T1_core_GLCMcontrast_2	Mean contrast of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
289	T1_core_GLCMcontrast_3	Mean contrast of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
290	T1_core_GLCMenergy_1	Mean energy of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.
291	T1_core_GLCMenergy_2	Mean energy of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
292	T1_core_GLCMenergy_3	Mean energy of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
293	T1_core_GLCMhomogeneity_1	Mean homogeneity of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.
294	T1_core_GLCMhomogeneity_2	Mean homogeneity of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
295	T1_core_GLCMhomogeneity_3	Mean homogeneity of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
296	T1_core_GLRLMSre	Short run emphasis of GLRLM in VOI_core in 256-leveled T1-weighted image.
297	T1_core_GLRLMLre	Long run emphasis of GLRLM in VOI_core in 256-leveled T1-weighted image.
298	T1_core_GLRLMGLn	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in 256-leveled T1-weighted image.
299	T1_core_GLRLMRp	RUN PERCENTAGE of GLRLM in VOI_core in 256-leveled T1-weighted image.
300	T1_core_GLRLMRln	RUN LENGTH NON-UNIFORMITY in VOI_core in 256-leveled T1-weighted image.
301	T1_core_GLRLMLrge	LOW GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T1-weighted image.
302	T1_core_GLRLMhrge	HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T1-weighted image.
303	T1_core_GLCMcontrast_1_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.
304	T1_core_GLCMcontrast_2_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
305	T1_core_GLCMcontrast_3_SD	Standard deviation of contrast of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
306	T1_core_GLCMenergy_1_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.
307	T1_core_GLCMenergy_2_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
308	T1_core_GLCMenergy_3_SD	Standard deviation of energy of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
309	T1_core_GLCMhomogeneity_1_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.
310	T1_core_GLCMhomogeneity_2_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
311	T1_core_GLCMhomogeneity_3_SD	Standard deviation of homogeneity of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
312	T1_core_GLRLMSre_SD	Standard deviation of Short run emphasis of GLRLM in VOI_core in 256-leveled T1-weighted image.

313	T1_core_GLRLMLre_SD	Standard deviation of Long run emphasis of GLRLM in VOI_core in 256-leveled T1-weighted image.
314	T1_core_GLRLMGLn_SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in 256-leveled T1-weighted image.
315	T1_core_GLRLMRp_SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_core in 256-leveled T1-weighted image.
316	T1_core_GLRLMRln_SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_core in 256-leveled T1-weighted image.
317	T1_core_GLRLMLrge_SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T1-weighted image.
318	T1_core_GLRLMhrge_SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in 256-leveled T1-weighted image.
319	T1_edema_Mean	Mean of VOI_edema in 256-leveled T1-weighted image.
320	T1_edema_SD	Standard deviation of VOI_edema in 256-leveled T1-weighted image.
321	T1_edema_Var	Variance of VOI_edema in 256-leveled T1-weighted image.
322	T1_edema_RMS	Root Mean Square of VOI_edema in 256-leveled T1-weighted image.
323	T1_edema_Max	Maximum of VOI_edema in 256-leveled T1-weighted image.
324	T1_edema_Min	Minimum of VOI_edema in 256-leveled T1-weighted image.
325	T1_edema_Median	Median of VOI_edema in 256-leveled T1-weighted image.
326	T1_edema_Mode	Mode of VOI_edema in 256-leveled T1-weighted image.
327	T1_edema_Entropy	Entropy of VOI_edema in 256-leveled T1-weighted image.
328	T1_edema_Kurtosis	Kurtosis of VOI_edema in 256-leveled T1-weighted image.
329	T1_edema_Skewness	Skewness of VOI_edema in 256-leveled T1-weighted image.
330	T1_edema_GLCMcontrast_1	Mean contrast of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 1.
331	T1_edema_GLCMcontrast_2	Mean contrast of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 2.
332	T1_edema_GLCMcontrast_3	Mean contrast of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 3.
333	T1_edema_GLCMenergy_1	Mean energy of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 1.
334	T1_edema_GLCMenergy_2	Mean energy of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 2.
335	T1_edema_GLCMenergy_3	Mean energy of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 3.
336	T1_edema_GLCMhomogeneity_1	Mean homogeneity of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 1.
337	T1_edema_GLCMhomogeneity_2	Mean homogeneity of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 2.
338	T1_edema_GLCMhomogeneity_3	Mean homogeneity of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 3.
339	T1_edema_GLRLMSre	Short run emphasis of GLRLM in VOI_edema in 256-leveled T1-weighted image.
340	T1_edema_GLRLMLre	Long run emphasis of GLRLM in VOI_edema in 256-leveled T1-weighted image.
341	T1_edema_GLRLMGLn	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in 256-leveled T1-weighted image.

342	T1_edema_GLRLMRp	RUN PERCENTAGE of GLRLM in VOI_edema in 256-levelled T1-weighted image.
343	T1_edema_GLRLMRln	RUN LENGTH NON-UNIFORMITY in VOI_edema in 256-levelled T1-weighted image.
344	T1_edema_GLRLMLrge	LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-levelled T1-weighted image.
345	T1_edema_GLRLMhrge	HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-levelled T1-weighted image.
346	T1_edema_GLCMcontrast_1_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 1.
347	T1_edema_GLCMcontrast_2_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 2.
348	T1_edema_GLCMcontrast_3_SD	Standard deviation of contrast of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 3.
349	T1_edema_GLCMenergy_1_SD	Standard deviation of energy of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 1.
350	T1_edema_GLCMenergy_2_SD	Standard deviation of energy of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 2.
351	T1_edema_GLCMenergy_3_SD	Standard deviation of energy of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 3.
352	T1_edema_GLCMhomogeneity_1_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 1.
353	T1_edema_GLCMhomogeneity_2_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 2.
354	T1_edema_GLCMhomogeneity_3_SD	Standard deviation of homogeneity of GLCM in VOI_edema in 256-levelled T1-weighted image with offset set to 3.
355	T1_edema_GLRLMSre_SD	Standard deviation of Short run emphasis of GLRLM in VOI_edema in 256-levelled T1-weighted image.
356	T1_edema_GLRLMLre_SD	Standard deviation of Long run emphasis of GLRLM in VOI_edema in 256-levelled T1-weighted image.
357	T1_edema_GLRLMGln_SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in 256-levelled T1-weighted image.
358	T1_edema_GLRLMRp_SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_edema in 256-levelled T1-weighted image.
359	T1_edema_GLRLMRln_SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_edema in 256-levelled T1-weighted image.
360	T1_edema_GLRLMLrge_SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-levelled T1-weighted image.
361	T1_edema_GLRLMhrge_SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in 256-levelled T1-weighted image.
362	T2_edema_GLCMcorrelation_1	Correlation of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 1.
363	T2_edema_GLCMcorrelation_2	Correlation of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 2.
364	T2_edema_GLCMcorrelation_3	Correlation of GLCM in VOI_edema in 256-levelled T2-weighted image with offset set to 3.

365	T2_edema_GLCMcorrelation_1_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 1.
366	T2_edema_GLCMcorrelation_2_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 2.
367	T2_edema_GLCMcorrelation_3_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled T2-weighted image with offset set to 3.
368	z_score_core Mean	Mean of VOI_core in Gdzscore 2).
369	z_score_core SD	Standard deviation of VOI_core in Gdzscore 2).
370	z_score_core Var	Variance of VOI_core in Gdzscore 2).
371	z_score_core RMS	Root Mean Square of VOI_core in Gdzscore 2).
372	z_score_core Max	Maximum of VOI_core in Gdzscore 2).
373	z_score_core Min	Minimum of VOI_core in Gdzscore 2).
374	z_score_core Median	Median of VOI_core in Gdzscore 2).
375	z_score_core Mode	Mode of VOI_core in Gdzscore 2).
376	z_score_core Entropy	Entropy of VOI_core in Gdzscore 2).
377	z_score_core Kurtosis	Kurtosis of VOI_core in Gdzscore 2).
378	z_score_core Skewness	Skewness of VOI_core in Gdzscore 2).
379	z_score_core_GLCMcontrast_1	Mean contrast of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
380	z_score_core_GLCMcontrast_2	Mean contrast of GLCM in VOI_core in Gdzscore 2) with offset set to 2.
381	z_score_core_GLCMcontrast_3	Mean contrast of GLCM in VOI_core in Gdzscore 2) with offset set to 3.
382	z_score_core_GLCMenergy_1	Mean energy of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
383	z_score_core_GLCMenergy_2	Mean energy of GLCM in VOI_core in Gdzscore 2) with offset set to 2.
384	z_score_core_GLCMenergy_3	Mean energy of GLCM in VOI_core in Gdzscore 2) with offset set to 3.
385	z_score_core_GLCMhomogeneity_1	Mean homogeneity of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
386	z_score_core_GLCMhomogeneity_2	Mean homogeneity of GLCM in VOI_core in Gdzscore 2) with offset set to 2.
387	z_score_core_GLCMhomogeneity_3	Mean homogeneity of GLCM in VOI_core in Gdzscore 2) with offset set to 3.
388	z_score_core_GLRLMSre	Short run emphasis of GLRLM in VOI_core in Gdzscore 2).
389	z_score_core_GLRLMLre	Long run emphasis of GLRLM in VOI_core in Gdzscore 2).
390	z_score_core_GLRLMGln	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in Gdzscore 2).
391	z_score_core_GLRLMRp	RUN PERCENTAGE of GLRLM in VOI_core in Gdzscore 2).
392	z_score_core_GLRLMRln	RUN LENGTH NON-UNIFORMITY in VOI_core in Gdzscore 2).
393	z_score_core_GLRLMLrge	LOW GRAY LEVEL RUN EMPHASIS in VOI_core in Gdzscore 2).
394	z_score_core_GLRLM Hrge	HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in Gdzscore 2).
395	z_score_core_GLCMcontrast_1_SD	Standard deviation of contrast of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
396	z_score_core_GLCMcontrast_2_SD	Standard deviation of contrast of GLCM in VOI_core in Gdzscore 2) with offset set to 2.

397	z_score_core_GLCMc ontrast 3 SD	Standard deviation of contrast of GLCM in VOI_core in Gdzscore 2) with offset set to 3.
398	z_score_core_GLCMe nergy 1 SD	Standard deviation of energy of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
399	z_score_core_GLCMe nergy 2 SD	Standard deviation of energy of GLCM in VOI_core in Gdzscore 2) with offset set to 2.
400	z_score_core_GLCMe nergy 3 SD	Standard deviation of energy of GLCM in VOI_core in Gdzscore 2) with offset set to 3.
401	z_score_core_GLCMh omogeniety 1 SD	Standard deviation of homogeneity of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
402	z_score_core_GLCMh omogeniety 2 SD	Standard deviation of homogeneity of GLCM in VOI_core in Gdzscore 2) with offset set to 2.
403	z_score_core_GLCMh omogeniety 3 SD	Standard deviation of homogeneity of GLCM in VOI_core in Gdzscore 2) with offset set to 3.
404	z_score_core_GLRLM Sre SD	Standard deviation of Short run emphasis of GLRLM in VOI_core in Gdzscore 2).
405	z_score_core_GLRLM Lre SD	Standard deviation of Long run emphasis of GLRLM in VOI_core in Gdzscore 2).
406	z_score_core_GLRLM Gln SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_core in Gdzscore 2).
407	z_score_core_GLRLM Rp SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_core in Gdzscore 2).
408	z_score_core_GLRLM Rln SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_core in Gdzscore 2).
409	z_score_core_GLRLM Lrge SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_core in Gdzscore 2).
410	z_score_core_GLRLM Hrge SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_core in Gdzscore 2).
411	z_score_edema Mean	Mean of VOI_edema in Gdzscore 2).
412	z_score_edema SD	Standard deviation of VOI_edema in Gdzscore 2).
413	z_score_edema Var	Variance of VOI_edema in Gdzscore 2).
414	z_score_edema RMS	Root Mean Square of VOI_edema in Gdzscore 2).
415	z_score_edema Max	Maximum of VOI_edema in Gdzscore 2).
416	z_score_edema Min	Minimum of VOI_edema in Gdzscore 2).
417	z_score_edema_Medi an	Median of VOI_edema in Gdzscore 2).
418	z_score_edema Mode	Mode of VOI_edema in Gdzscore 2).
419	z_score_edema_Entr opy	Entropy of VOI_edema in Gdzscore 2).
420	z_score_edema_Kurt osis	Kurtosis of VOI_edema in Gdzscore 2).
421	z_score_edema_Skew ness	Skewness of VOI_edema in Gdzscore 2).
422	z_score_edema_GLCM contrast 1	Mean contrast of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
423	z_score_edema_GLCM contrast 2	Mean contrast of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
424	z_score_edema_GLCM contrast 3	Mean contrast of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.
425	z_score_edema_GLCM energy 1	Mean energy of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
426	z_score_edema_GLCM energy 2	Mean energy of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
427	z_score_edema_GLCM energy 3	Mean energy of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.
428	z_score_edema_GLCM homogeniety 1	Mean homogeneity of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
429	z_score_edema_GLCM homogeniety 2	Mean homogeneity of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
430	z_score_edema_GLCM homogeniety 3	Mean homogeneity of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.

431	z_score_edema_GLRL MSre	Short run emphasis of GLRLM in VOI_edema in Gdzscore 2).
432	z_score_edema_GLRL MLre	Long run emphasis of GLRLM in VOI_edema in Gdzscore 2).
433	z_score_edema_GLRL MGl n	GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in Gdzscore 2).
434	z_score_edema_GLRL MRp	RUN PERCENTAGE of GLRLM in VOI_edema in Gdzscore 2).
435	z_score_edema_GLRL MRl n	RUN LENGTH NON-UNIFORMITY in VOI_edema in Gdzscore 2).
436	z_score_edema_GLRL MLrge	LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in Gdzscore 2).
437	z_score_edema_GLRL MHRge	HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in Gdzscore 2).
438	z_score_edema_GLCM contrast 1 SD	Standard deviation of contrast of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
439	z_score_edema_GLCM contrast 2 SD	Standard deviation of contrast of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
440	z_score_edema_GLCM contrast 3 SD	Standard deviation of contrast of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.
441	z_score_edema_GLCM energy 1 SD	Standard deviation of energy of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
442	z_score_edema_GLCM energy 2 SD	Standard deviation of energy of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
443	z_score_edema_GLCM energy 3 SD	Standard deviation of energy of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.
444	z_score_edema_GLCM homogeniety 1 SD	Standard deviation of homogeneity of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
445	z_score_edema_GLCM homogeniety 2 SD	Standard deviation of homogeneity of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
446	z_score_edema_GLCM homogeniety 3 SD	Standard deviation of homogeneity of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.
447	z_score_edema_GLRL MSre SD	Standard deviation of Short run emphasis of GLRLM in VOI_edema in Gdzscore 2).
448	z_score_edema_GLRL MLre SD	Standard deviation of Long run emphasis of GLRLM in VOI_edema in Gdzscore 2).
449	z_score_edema_GLRL MGl n SD	Standard deviation of GRAY LEVEL NON-UNIFORMITY of GLRLM in VOI_edema in Gdzscore 2).
450	z_score_edema_GLRL MRp SD	Standard deviation of RUN PERCENTAGE of GLRLM in VOI_edema in Gdzscore 2).
451	z_score_edema_GLRL MRl n SD	Standard deviation of RUN LENGTH NON-UNIFORMITY in VOI_edema in Gdzscore 2).
452	z_score_edema_GLRL MLrge SD	Standard deviation of LOW GRAY LEVEL RUN EMPHASIS in VOI_edema in Gdzscore 2).
453	z_score_edema_GLRL MHRge SD	Standard deviation of HIGH GRAY LEVEL RUN EMPHASIS in VOI_edema in Gdzscore 2).
454	T1_edema_GLCMcorre lation 1	Correlation of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 1.
455	T1_edema_GLCMcorre lation 2	Correlation of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 2.
456	T1_edema_GLCMcorre lation 3	Correlation of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 3.
457	T1_edema_GLCMcorre lation_1_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 1.
458	T1_edema_GLCMcorre lation_2_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 2.
459	T1_edema_GLCMcorre lation_3_SD	Standard deviation of Correlation of GLCM in VOI_edema in 256-leveled T1-weighted image with offset set to 3.

460	z_score_edema_GLCM correlation 1	Correlation of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
461	z_score_edema_GLCM correlation 2	Correlation of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
462	z_score_edema_GLCM correlation 3	Correlation of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.
463	z_score_edema_GLCM correlation 1 SD	Standard deviation of Correlation of GLCM in VOI_edema in Gdzscore 2) with offset set to 1.
464	z_score_edema_GLCM correlation 2 SD	Standard deviation of Correlation of GLCM in VOI_edema in Gdzscore 2) with offset set to 2.
465	z_score_edema_GLCM correlation 3 SD	Standard deviation of Correlation of GLCM in VOI_edema in Gdzscore 2) with offset set to 3.
466	T1_core_GLCMcorrelation 1	Correlation of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.
467	T1_core_GLCMcorrelation 2	Correlation of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
468	T1_core_GLCMcorrelation 3	Correlation of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
469	T1_core_GLCMcorrelation_1_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 1.
470	T1_core_GLCMcorrelation_2_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 2.
471	T1_core_GLCMcorrelation_3_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T1-weighted image with offset set to 3.
472	T2_core_GLCMcorrelation 1	Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
473	T2_core_GLCMcorrelation 2	Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
474	T2_core_GLCMcorrelation 3	Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.
475	T2_core_GLCMcorrelation_1_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 1.
476	T2_core_GLCMcorrelation_2_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
477	T2_core_GLCMcorrelation_3_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.
478	T1Gd_core_GLCMcorrelation_1	Correlation of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
479	T1Gd_core_GLCMcorrelation_2	Correlation of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 2.
480	T1Gd_core_GLCMcorrelation_3	Correlation of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 3.
481	T1Gd_core_GLCMcorrelation_1_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled Gadolinium enhanced T1-weighted image with offset set to 1.
482	T1Gd_core_GLCMcorrelation_2_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 2.
483	T1Gd_core_GLCMcorrelation_3_SD	Standard deviation of Correlation of GLCM in VOI_core in 256-leveled T2-weighted image with offset set to 3.

484	z_score_core_GLCMc orrelation 1	Correlation of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
485	z_score_core_GLCMc orrelation 2	Correlation of GLCM in VOI_core in Gdzscore 2) with offset set to 2.
486	z_score_core_GLCMc orrelation 3	Correlation of GLCM in VOI_core in Gdzscore 2) with offset set to 3.
487	z_score_core_GLCMc orrelation 1 SD	Standard deviation of Correlation of GLCM in VOI_core in Gdzscore 2) with offset set to 1.
488	z_score_core_GLCMc orrelation 2 SD	Standard deviation of Correlation of GLCM in VOI_core in Gdzscore 2) with offset set to 2.
489	z_score_core_GLCMc orrelation 3 SD	Standard deviation of Correlation of GLCM in VOI_core in Gdzscore 2) with offset set to 3.

- 1) Prewitt filtering was performed by applying first order horizontal G_x and vertical G_y differentiation and by calculating the magnitude G, where G_x and G_y stands for the horizontal and vertical gradient of the image respectively and A for the original two-dimensional gray scale image

$$G_x = \begin{bmatrix} -1 & 0 & +1 \\ -1 & 0 & +1 \\ -1 & 0 & +1 \end{bmatrix} * A, \quad G_y = \begin{bmatrix} -1 & -1 & -1 \\ 0 & 0 & 0 \\ +1 & +1 & +1 \end{bmatrix} * A, \quad G = \sqrt{G_x^2 + G_y^2}$$

- 2) Gdzscore image was created by visualizing the magnitude of enhancement calculated from both 256-leveled non-enhanced and Gadolinium-enhanced T1-weighted images. 256-leveled Gadolinium-enhanced T1-weighted images was plotted as a function of 256-leveled non-enhanced T1-weighted images in whole brain. Linear regression fitting was applied to the data obtained, which can be expressed as follows;

$$(GdT1WI) = \alpha(T1WI) + \beta$$

where (GdT1WI) and (T1WI) are 256-leveled Gadolinium-enhanced and non-enhanced T1-weighted images. By solving α and β , one can now determine the linear correlation of 256-leveled Gadolinium-enhanced and non-enhanced T1-weighted images.

Next, the magnitude of deviation from the above solved linear regression line for any particular voxel (*i*) can be expressed as follows:

$$deviation_i = \frac{(GdT1WI)_i - \alpha(T1WI)_i - \beta}{\sqrt{\alpha^2 + 1}}$$

where (GdT1WI)_{*i*} and (T1WI)_{*i*} are the 256-leveled values of voxel (*i*) in Gadolinium-enhanced and non-enhanced T1-weighted images.

Finally, the Gdzscore of each data point was defined as follows

$$Gdzscore_i = \frac{deviation_i - \mu}{\rho}$$

where μ and σ are the means and standard deviation of $deviation_i$ in the whole brain.