

**Regional cerebral dopamine D2 receptor binding activities in patients without hepatic encephalopathy by positron emission tomography using  $^{11}\text{C}$ -methylspiperone**

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**Abstract**

Although many substrates were recognized as the causes of hepatic encephalopathy (HE), little is known to the central alterations of dopamine in liver cirrhosis. Thus our aim is to clarify the binding activities of the dopamine D2 receptor in patients with liver cirrhosis by positron emission tomography.

Twenty seven patients with liver cirrhosis without HE and three controls were underwent PET using  $^{11}\text{C}$ -methylspiperone. Region of interest (ROI) was determined by a three-dimensional stereotaxic ROI template. The pixel values of twelve ROI corrected by the pixel value of cerebellum after 80 minutes static scan were used as dopamine D2 binding activities. D2 binding activities were significantly decreased in hippocampus and thalamus compared to controls. Statistically, total bilirubin showed positive correlation to the activities in hippocampus, thalamus and temporal lobe. Prothrombin activity showed negative correlation in thalamus, central, parietal, occipital and hippocampus. Fischer's Ratio showed negative correlation to the activities of dopamine D2 receptor in thalamus. These findings may suggest that the activities of dopamine D2 receptor in cirrhotic patients have some relations to the severity of hepatic disease and/or metabolic changes of dopamine.