

Glymphatic system dysfunction in patients with early chronic kidney disease

인제대학교 해운대백병원 내과¹, 인제대학교 해운대백병원 신경과², 딥노이드 임상연구팀³

배호윤¹, 허창민¹, 이동아², 박강민², 이유진¹, 박시형¹, 김양욱¹, 고정해¹, 유병철³, 박봉수¹

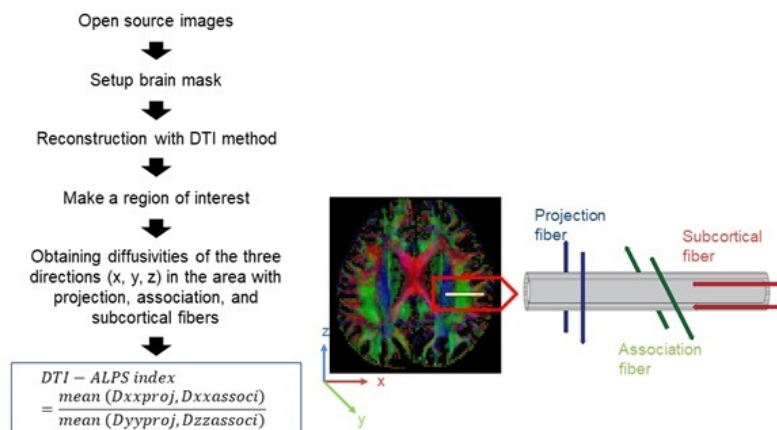
Background/Aims: It is a recent finding that glymphatic system dysfunction contributes to various neurological problems. The purpose of this research was to assess the function of the glymphatic system in neurologically asymptomatic early chronic kidney disease (CKD) patients and healthy controls, using diffusion tensor image analysis along perivascular space (DTI-ALPS) index.

Methods: In a prospective study, we included patients with early CKD who were asymptomatic for neurological issues and obtained clinical and laboratory data. In all participants, brain magnetic resonance imaging (MRI) with diffusion tensor imaging (DTI) was conducted. We used DSI program for DTI preprocessing and DTI-ALPS index estimation. The DTI-ALPS index was compared between patients with early CKD and healthy controls, and the association between clinical characteristics and the DTI-ALPS index was investigated.

Results: Eighteen patients with early CKD and 18 healthy controls were included in this study. Patients with early CKD had lower DTI-ALPS index than healthy controls (1.259 ± 0.199 vs. 1.477 ± 0.232 , $p=0.004$). In the correlation analysis, the DTI-ALPS index had no significant relationship with other clinical factors.

Conclusions: We suggest dysfunction of glymphatic system in patients with early chronic kidney disease using the DTI-ALPS index. This may be related to the pathophysiology of neurological problems including impairment of cognition in patients with early CKD.

<Figure 1>



<Figure2>

