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## Abstract Submission No.: A-0259

# Choroid plexus enlargement in patients with end-stage renal disease: implications for glymphatic system dysfunction

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**Objectives :** The choroid plexus plays a role in eliminating detrimental metabolites from the brain as an integral component of the glymphatic system. The aim of this study was to investigate the alterations of the choroid plexus volumes in patients with end-stage renal disease (ESRD) compared to healthy controls.
**Methods :** We prospectively enrolled 40 patients with ESRD and 42 healthy controls. They underwent brain magnetic resonance imaging scanning, especially with three dimensional T1-weighted imaging. We analyzed the choroid plexus volumes and compared them between the groups. We also evaluated the neuropsychological tests in patients with ESRD. We investigated the association between the choroid plexus volumes and neuropsychological tests.
**Results :** There were significant differences of the choroid plexus volumes between the patients with ESRD and healthy controls. The choroid plexus volumes in patients with ESRD were higher than those in healthy controls (1.392 vs. 1.138%, $p<0.001$). The scores of word-list recognition in verbal memory were negatively correlated with the choroid plexus volumes in patients with ESRD ($r=-0.428$, $p=0.006$).
**Conclusions :** We demonstrates the enlargement of the choroid plexus in patients with ESRD compared to healthy controls. This finding suggests that patients with ESRD have glymphatic system dysfunction, which may be related to their cognitive impairment.

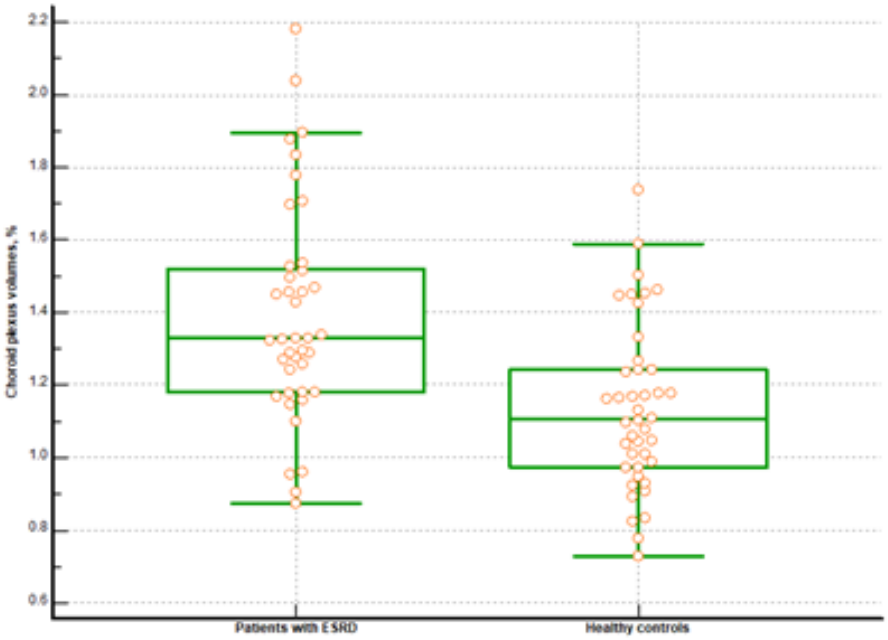
Table 1..png

**Table 1. Demographic and clinical characteristics in patients with ESRD and healthy controls**

| | Patients with ESRD (N=40) | Healthy controls (N=42) | *p*-value |
|---|---|---|---|
| Age, years (SD) | 62.1 (6.9) | 61.9 (7.0) | 0.937 |
| Men, N (%) | 19 (47.5) | 19 (47.6) | 0.991 |
| Dialysis year, months (SD) | 46.5 (52.53) | | |
| Dialysis types (Hemodialysis/Peritoneal dialysis) | 20/20 | | |
| Education, years (SD) | 10.4 (4.1) | | |
| Hypertension, N (%) | 40 (100) | | |
| Diabetes mellitus, N (%) | 17 (42.5) | | |
| Hemoglobin, g/dL (SD) | 10.41 (1.17) | | |
| Hematocrit, % (SD) | 31.91 (3.68) | | |
| Protein, g/dL (SD) | 6.55 (0.63) | | |
| Albumin, g/dL (SD) | 3.8 (0.34) | | |
| Aspatate aminotransferase, U/L (SD) | 21.1 (6.89) | | |
| Alanine aminotrasferase, U/L (SD) | 20.13 (10.7) | | |
| BUN, mg/dL (SD) | 58.84 (16.72) | | |
| Creatinine, mg/dL (SD) | 9 (2.5) | | |
| Sodium, mmol/L (SD) | 138.78 (3.25) | | |
| Potassium, mmol/L (SD) | 4.81 (0.65) | | |
| Chloride, mmol/L (SD) | 99.23 (4.16) | | |
| Calcium, mg/dL (SD) | 8.49 (0.68) | | |
| Phosphate, mg/dL (SD) | 4.85 (0.94) | | |
| Parathyroid hormone, pg/mL (SD) | 286.63 (209.31) | | |
| Total $CO_2$ contents, mmol/L (SD) | 24.68 (2.62) | | |

SD: standard deviations, ESRD: end-stage renal disease

Table 1..png


Choroid plexus volumes, %
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
Patients with ESRD
Healthy controls