소아 복막 투석 환자에서 혈장 및 투석액의 VEGF, VEGF-C 농도와 복막 용질 이동성에 관한 연구

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Relationship of Peritoneal Solute Transport Rate with VEGF and VEGF-C in Children Undergoing Peritoneal Dialysis

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Background : Vascular endothelial growth factor (VEGF) appears to play a central role in the process leading to peritoneal angiogenesis and increased level of VEGF may conrtibute to high peritoneal small-solute transport rate (PSTR) in continuous ambulatory peritoneal dialysis (CAPD) patients in adult. VEGF-C is related to lymphangiogenesis, but its role in peritoneal solute transport rate is not known. In this study, we evaluated possible relationship between dialysate VEGF and VEGF-C levels and PSTR in children.

Methods : Twenty children with no apparent inflammation process or disease, who had been on CAPD, were enrolled. Standard peritoneal equilibration test (PET) was done to evaluate PSTR. D/Pcreat and D/D0 gluc were calcualted at 4 hr of PET. Overnight dialysate levels of VEGF and VEGF-C were measured using commercial ELISA kit. Plasma levels of VEGF and VEGF-C were also measured. Correlation between dialysate, plasma VEGF (or VEFG-C) and D/Pcreat (D/D0 glu) was analyzed.

Results : Mean age was 10.5±5.02 years. Mean peritoneal dialysis duration was 9.25±7.18 months. Mean overnight dialysate VEGF and VEGF-C level were 50.00±26.53 pg/mL and 202.91±138.42 pg/mL, respectively. Mean plasma VEGF and VEGF-C level were 77.35±35.81 pg/mL and 776.52±334.15 pg/mL. Dialysate VEGF level had significant correlations with dialysate VEGF-C ($r=0.711$, $p<0.001$), D/Pcreat ($r=0.511$, $p=0.011$) and D/D0gluc ($r=-0.743$, $p<0.001$). Dialysate VEGF-C level had significant correlations with D/Pcreat ($r=0.638$, $p=0.002$) and D/D0gluc ($r=-0.778$ $p<0.001$). No significant correlation was noted between plasma and dialysate VEGF (or VEGF-C) level.

Conclusion : There was significant correlation between dialysate VEGF and VEGF-C levels and significant correlation was noted between dialysate VEGF and PSTR. Interestingly, dialysate VEGF-C levels had significant correlation with PSTR. High PSTR seems to be related to VEGF-C and VEGF. Lymphangiogenesis as well as angiogenesis seems to have relationship with PSTR in children on CAPD.