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Dialysis

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The Study of Utility of Procalcitonin as a Biomarker for Peritoneal Dialysis Peritonitis

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Background: Peritonitis is a common complication in peritoneal dialysis (PD). Procalcitonin is a peptide hormone which has been used as a biomarker for the diagnosis of bacterial infection. We aimed to investigate the utility of procalcitonin in the patients with PD peritonitis.

Methods: This study included thirty-three PD peritonitis episodes for the periods of total 450 days and peritoneal analysis from seven patients without peritonitis. We investigated clinical characteristics and inflammatory markers including serum and PD effluent levels of procalcitonin at the time of initial visit and discharge.

Results: The mean of dialysis vintage in the patients with peritonitis was 1774.4 days, incidence of total peritonitis during their PD periods: 4.3 times, interval from symptom onset to visit: 13.6 hours, duration of intra-peritoneal antibiotic treatment: 8.2 days, and interval from clinical improvement to recurrence: 80.7 days. Initial serum procalcitonin increased to 407.0 ± 1415.7 pg/mL (mean \pm standard deviation, reference values: healthy <50 pg/mL). PD effluent procalcitonin also increased compared with in control group, but not significantly (72.6 ± 200.7 vs. 14.7 ± 9.9 pg/mL, $p=0.455$). The serum procalcitonin decreased to 132.5 ± 301.9 pg/mL with clinical improvement but not significantly ($p=0.267$), and the PD effluent procalcitonin also decreased 37.0 ± 80.1 pg/mL, but not significantly ($p=0.378$). Pearson's correlation analysis showed that the serum and PD effluent procalcitonin did not have relationships with existing inflammatory markers such as ESR, CRP. Lastly, procalcitonin could not predict recurrence and mortality of peritonitis.

Conclusion: Collectively, procalcitonin showed the tendencies corresponding to clinical course of PD peritonitis, but not statistical significances. We believe that procalcitonin is not superior biomarker in PD peritonitis compared with other existing markers.

Keywords: Peritoneal dialysis, Peritonitis, Procalcitonin