PERITONEAL INFLAMMATION INDUCES SYSTEMIC ERYPTOSIS IN PERITONEAL DIALYSIS-ASSOCIATED PERITONITIS

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Background and Aims: Eryptosis is stress-induced RBC (Red Blood Cell) death mechanism. Our preliminary data show that there is a significant increase of eryptosis during peritoneal dialysis-associated peritonitis. Furthermore, there is an elevation of local and systemic inflammatory mediators. The aim of this study was to evaluate the relationship between systemic eryptosis levels in peritonitis and specific peritonitis biomarkers in peritonitis effluent (PDE), such as Peritoneal White Blood cell count (pWBC), peritoneal NGAL (pNGAL) and peritoneal cytokines levels.

Method: We enrolled 22 PD patients with peritonitis and 17 healthy subjects. PD-related peritonitis was defined according to the Guidelines of the International Society of Peritoneal Dialysis. At the time of diagnosis, blood samples were collected for eryptosis and peritoneal effluent were taken to evaluate pWBC, pNGAL and cytokines. All eryptotic measurements were made in freshly isolated RBCs. PS avidly binds AnnexinV, which is thus employed to identify eryptotic cells. Thus, PS exposure at RBC surface was estimated from FITC-AnnexinV binding using flow cytometric analyses.

Results: 13/22 patients were treated with continuous ambulatory PD (CAPD) and 9 with automated PD (APD). The median length of PD treatment was 28.1 months and the range was: minimum: 3 – maximum: 124.9 months. The percentage of AnnexinV-binding RBCs was significantly higher in PD patients with peritonitis than in CTR (PD patients with peritonitis: 7.7; IQR 4.3-14.2, versus CTR: 0.8; IQR 0.7-1.3; p<0.001) (Figure 1). WBC, NGAL and cytokines levels in PDE are reported in Table 2. We observed important correlation between eryptosis levels and peritoneal biomarkers (Figure 2).

Conclusion: In conclusion, we investigated a potential connection between systemic eryptosis and peritoneal biomarkers involved in peritonitis. The presented results revealed that upregulated inflammatory markers could be the cause of high levels of systemic eryptosis during PD-related peritonitis.