



USEFULLNESS OF P11 IN THE PERIPHERAL BLOOD AS DEPRESSION MARKER IN DIALYSIS PATIENTS

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BACKGROUND

Patients on maintenance dialysis have the high prevalence of depression than normal population. The serotonin (5-hydroxytryptamine (5-HT)) system has been implicated in the pathophysiology of depression, especially, 5-HT receptors (5-HTRs) play an important role in regulating serotonin neurotransmission. P11 (a member of the S100 family of proteins) was found to interact with 5-HT_{1B}R and 5-HT₄R and have relation to depression in recent studies. Also, inflammation can affect the level of P11. We planned the study to assess the P11 as a depression marker in maintenance dialysis patients.

Methods

As a single center cross-sectional study, we examined the peripheral blood mononuclear cells P11 mRNA, IL-6, TNF- α of patients with hemodialysis (HD, N=27), peritoneal dialysis (PD, N=39) and healthy group (N=7). Groups were divided by presence of depressive mood and categorized by severity of depressed mood via Beck Depression Inventory (BDI).

Table 1. Basic characteristics of non-depressive group

	Control (7)	HD (15)	PD (14)	P-value
Age	49 \pm 6.8	58.67 \pm 2.8	58.07 \pm 2.8	0.26
Sex (Male)	4	11	9	0.73
Dialysis vintage (month)	.	20.3 \pm 2.5	42.4 \pm 12.9	0.47
Hemoglobin (g/dL)	13.9 \pm 0.59	10.5 \pm 0.17	10.2 \pm 0.37	0.001*
WBC (/mm ³)	6852 \pm 492	6623 \pm 346	9198 \pm 669	0.01*
Albumin (g/dL)	4.1 \pm 0.11	3.6 \pm 0.05	3.2 \pm 0.12	0.01*
dCt mean	2.29 \pm 0.37	5.51 \pm 0.7	1.97 \pm 0.33	0.003*
IL-6 (pg/ml)	2.23 \pm 0.49	6.43 \pm 1.34	7.53 \pm 1.39	0.018*
TNF-alpha (pg/ml)	1.85 \pm 0.53	4.31 \pm 0.26	4.15 \pm 0.25	0.006*

HD: Hemodialysis, PD: Peritoneal dialysis

(*)Means significant differences between three groups

There was no significant differences between control and PD group in the dCt mean value by subgroup analysis ($p = 0.78$).

Results

In non-depressive group (BDI <10), The dCt means of P11 were high in HD group (5.51 \pm 0.7 (HD, N=15) vs. 1.39 \pm 0.33 (PD, N=11) and 2.29 \pm 0.37 (control, N=7), $p < 0.05$). The mean IL-6 levels were low in control group (6.43 \pm 1.34 pg/mL (HD) and 7.53 \pm 1.39 pg/mL (PD) vs. 2.23 \pm 0.49 pg/mL (control), $p < 0.05$). The mean TNF- α levels were low in control group (4.31 \pm 0.26 pg/mL (HD) and 4.15 \pm 0.25 pg/mL (PD) vs. 1.85 \pm 0.53 pg/mL (control), $p < 0.05$) respectively. In depressive group (BDI \geq 10), P11 levels showed relationships with depression severity in peritoneal dialysis group (spearman rho=0.2, $p = 0.09$).

Conclusion

Systemic inflammation was observed in both dialysis groups. Despite taking into consideration the effect of inflammation, P11 could be used as depression marker in peritoneal dialysis group compared to control group. However, there was no significant correlation or tendency with P11 and depression in hemodialysis group. So, additional large studies and further investigations must be needed for clinical use.

Figure 1. Relationships between P11 and depression (left: peritoneal dialysis, right: hemodialysis)

