

COMPARISON OF PLASMA PENTOSIDINE LEVELS IN HOME HEMODIALYSIS PATIENTS AND CENTER HEMODIALYSIS PATIENTS

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INTRODUCTION AND AIMS

Advanced glycation end products (AGEs), in addition to being a complication of diabetes, are known to be associated with cardiovascular complications in renal failure patients, especially those undergoing dialysis, and malnutrition.

Home hemodialysis (HHD) patients tend to have longer dialysis duration and more frequent dialysis than center hemodialysis (CHD) patients. We report plasma pentosidine (Pent) levels in an HHD group that worked during the day and a CHD group that worked during the day and received HD in the HD clinic at night.

The aim of this study is to evaluate whether the plasma Pent level of HHD patients is lower than that of CHD patients, and whether HHD is effective in eliminating Pent.

METHODS

The subjects were 20 HHD patients (mean age: 50.5 ± 9.8 years, HD history: 150.0 ± 99.5 days, BW: 63.4 ± 7.8 kg, HD time: 5.1 ± 0.6 h/session, 17.2 ± 2.4 h/week, hemodialysis product (HDP): 63.3 ± 20.0 , KT/V: 1.60 ± 0.22) and 28 CHD patients (mean age: 54.5 ± 9.7 years, HD history: 144.3 ± 103.3 days, BW: 61.2 ± 12.2 kg, HD time: 4.5 ± 0.5 h/session, 13.6 ± 1.4 h/wk, HDP: 40.9 ± 4.2 , KT/V: 1.45 ± 0.22). There were 2 diabetes mellitus (DM) patients in the HHD group and 3 DM patients in the CHD group.

Plasma Pent levels were measured using an ELISA kit (Fushimi Pharmaceutical Co., Japan), and then compared between the HHD and CHD groups. Correlations between the following items and plasma Pent levels were investigated.

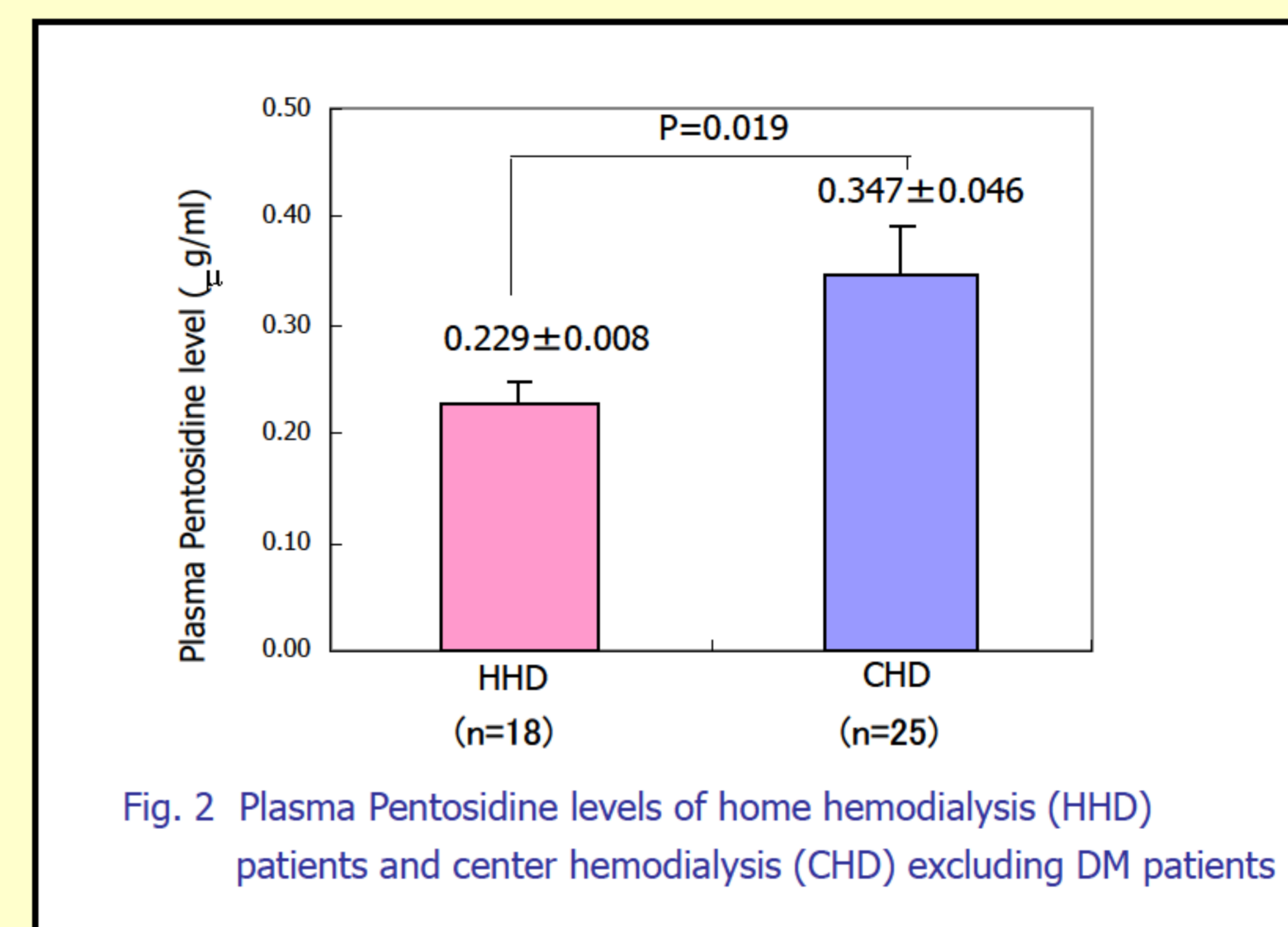
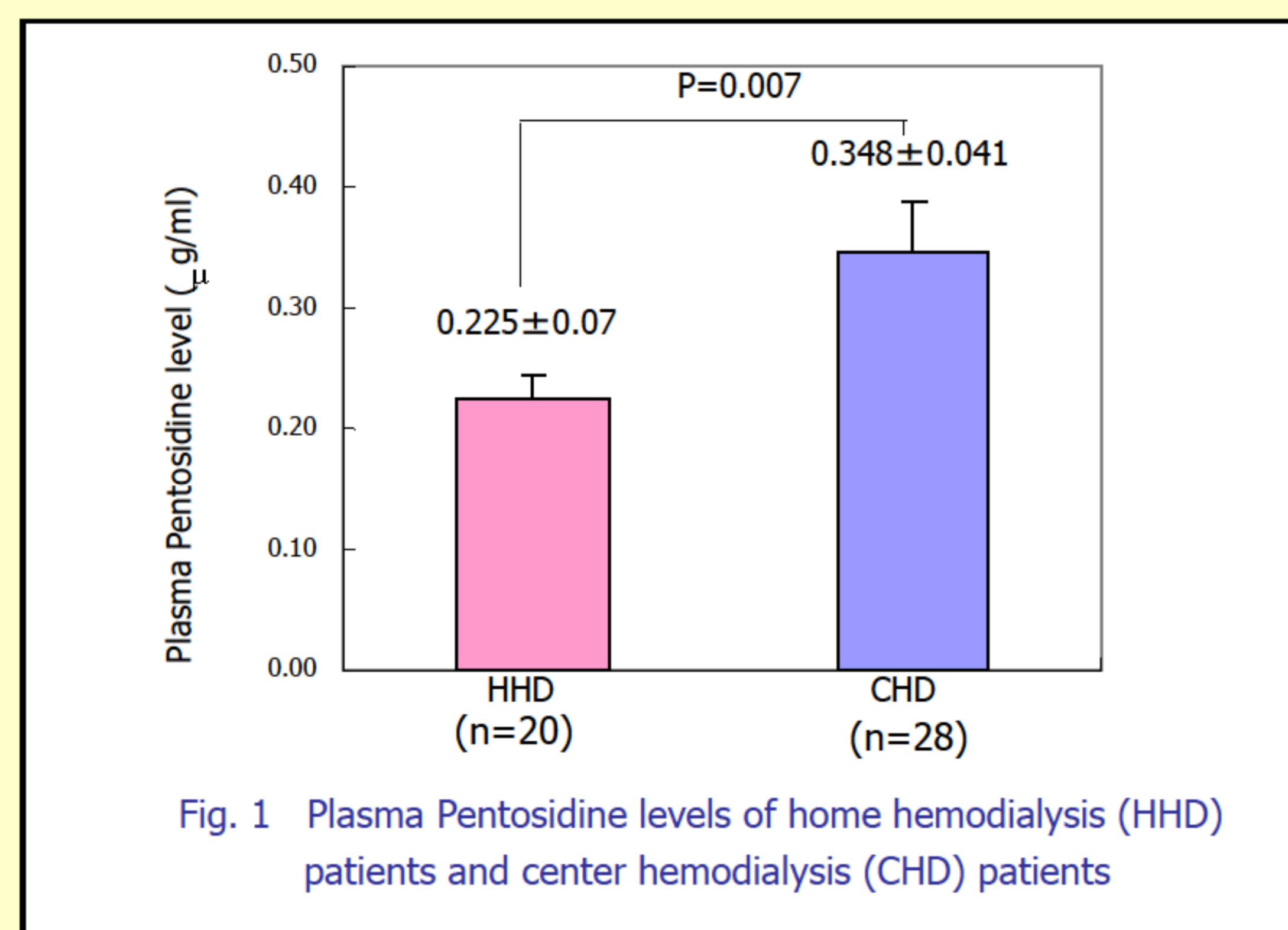
A) HD duration and frequency: dialysis duration/session, total dialysis duration/ month, number of dialysis sessions/month, hemodialysis product(HDP).

B) HD adequacy: KT/V.

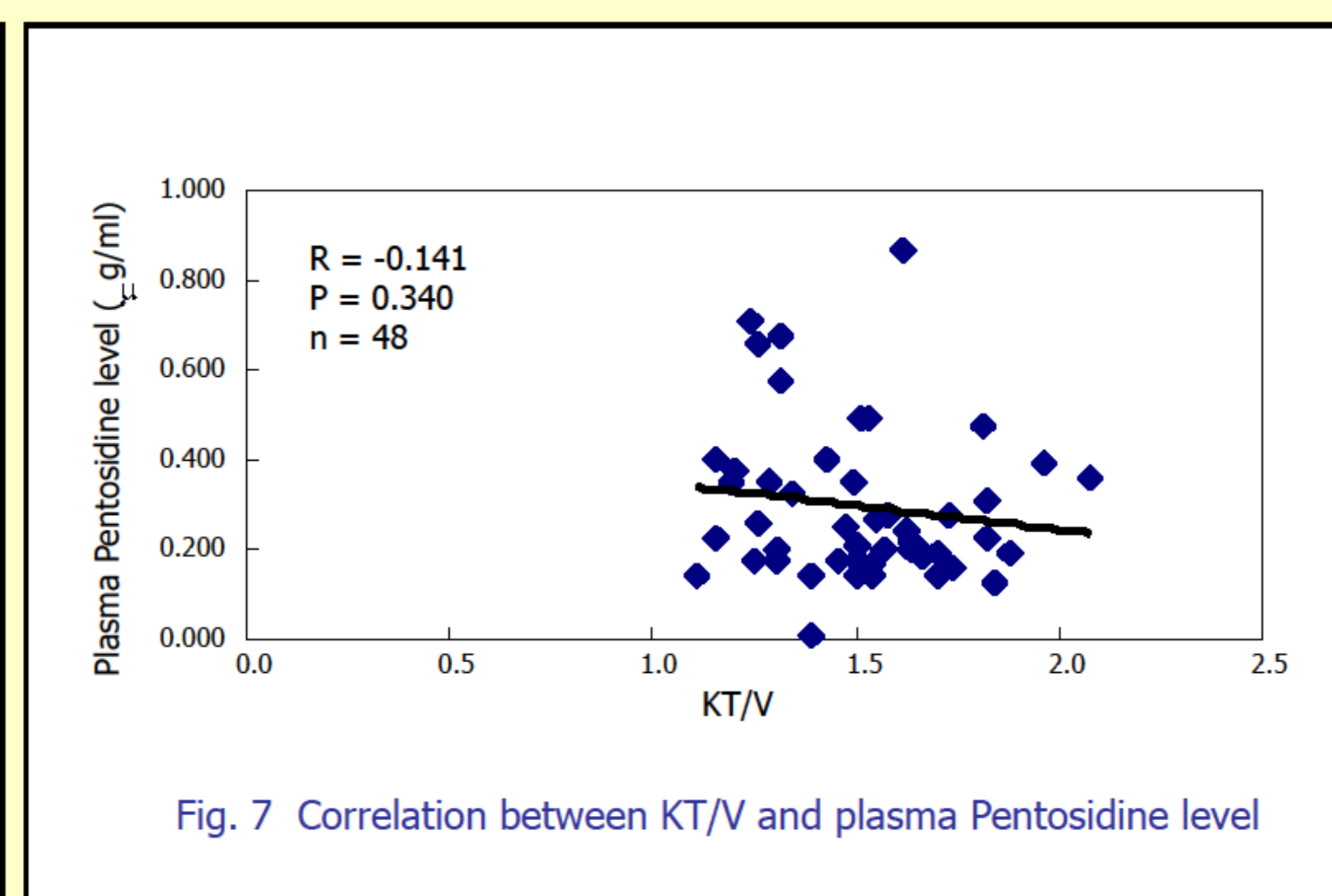
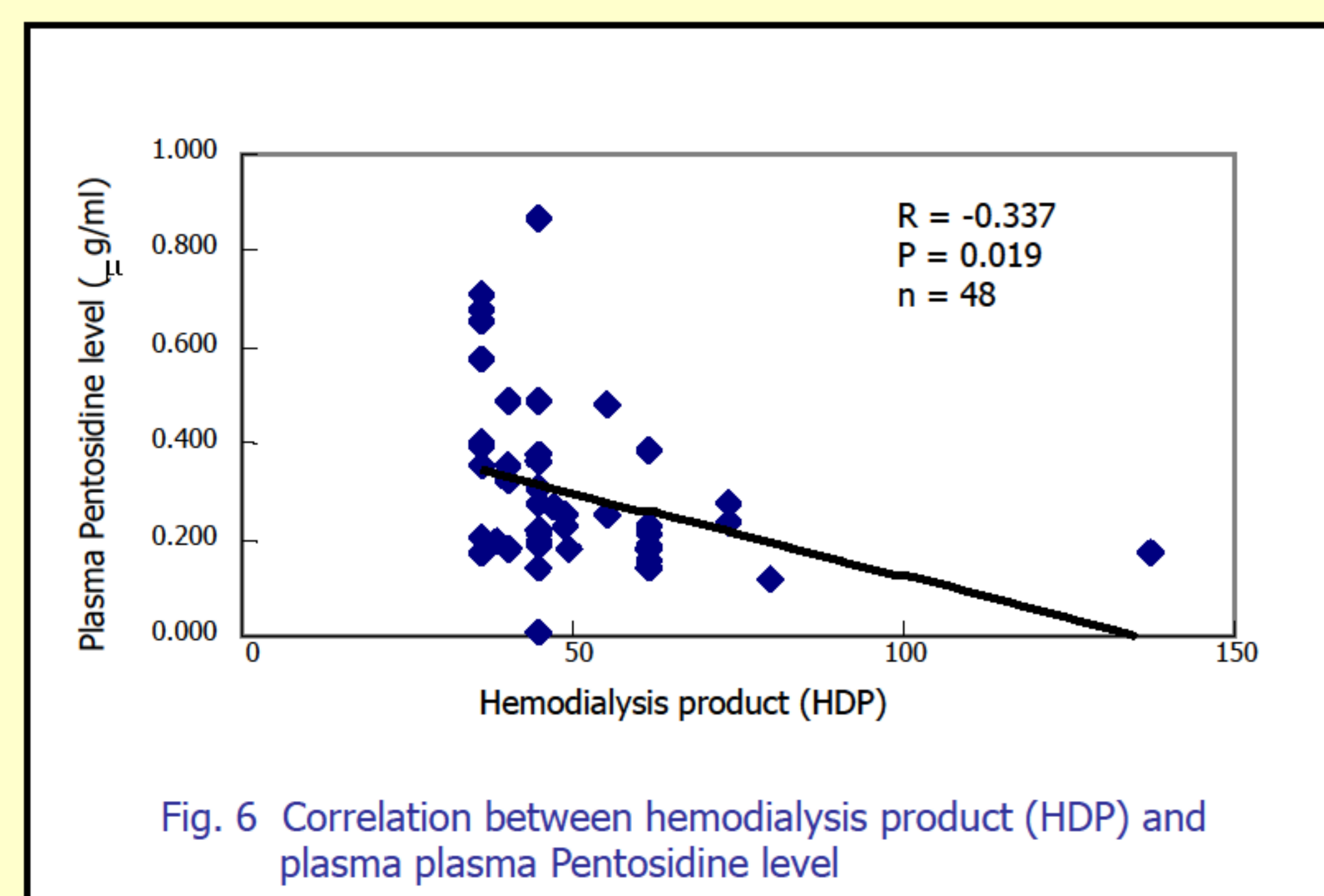
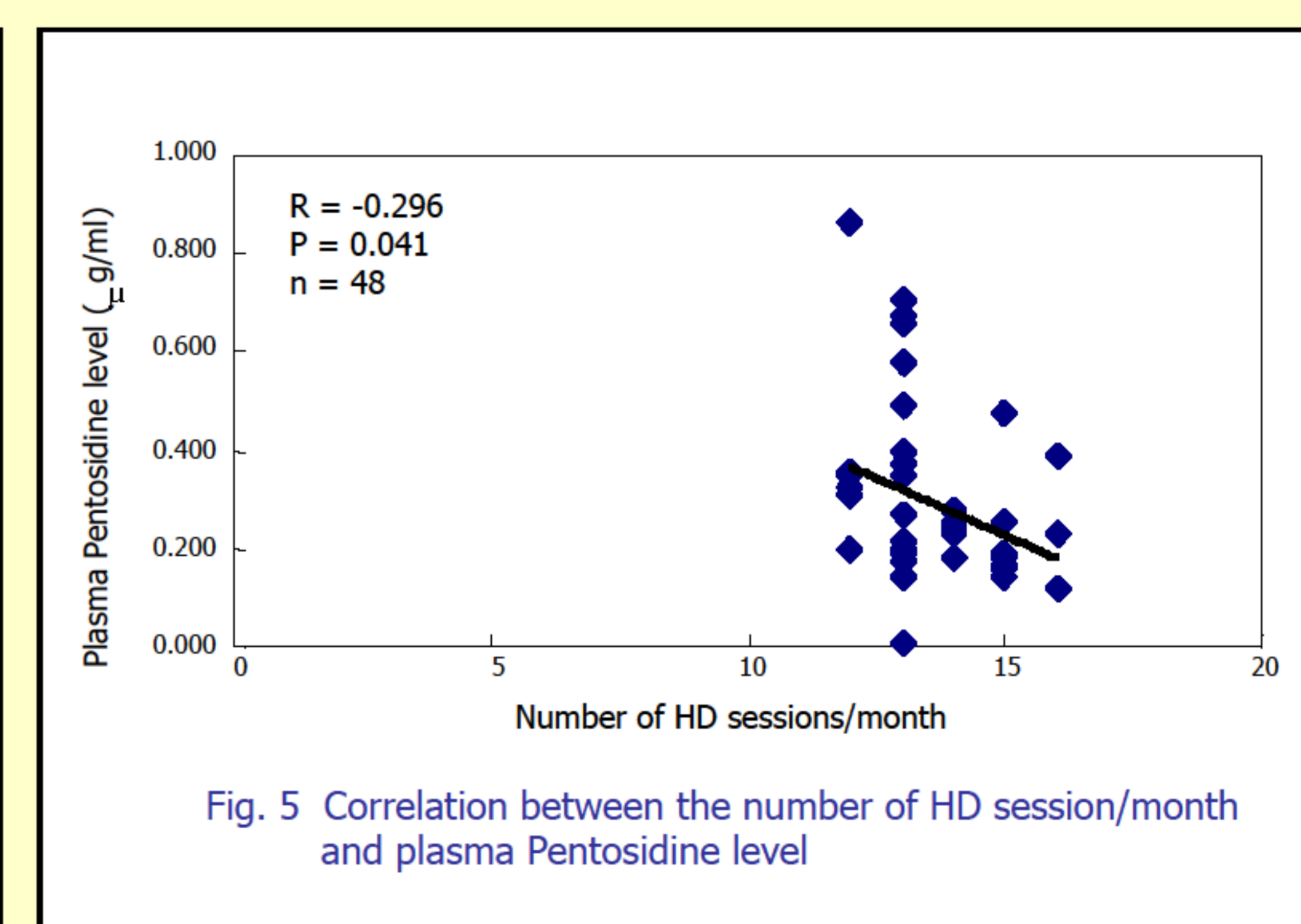
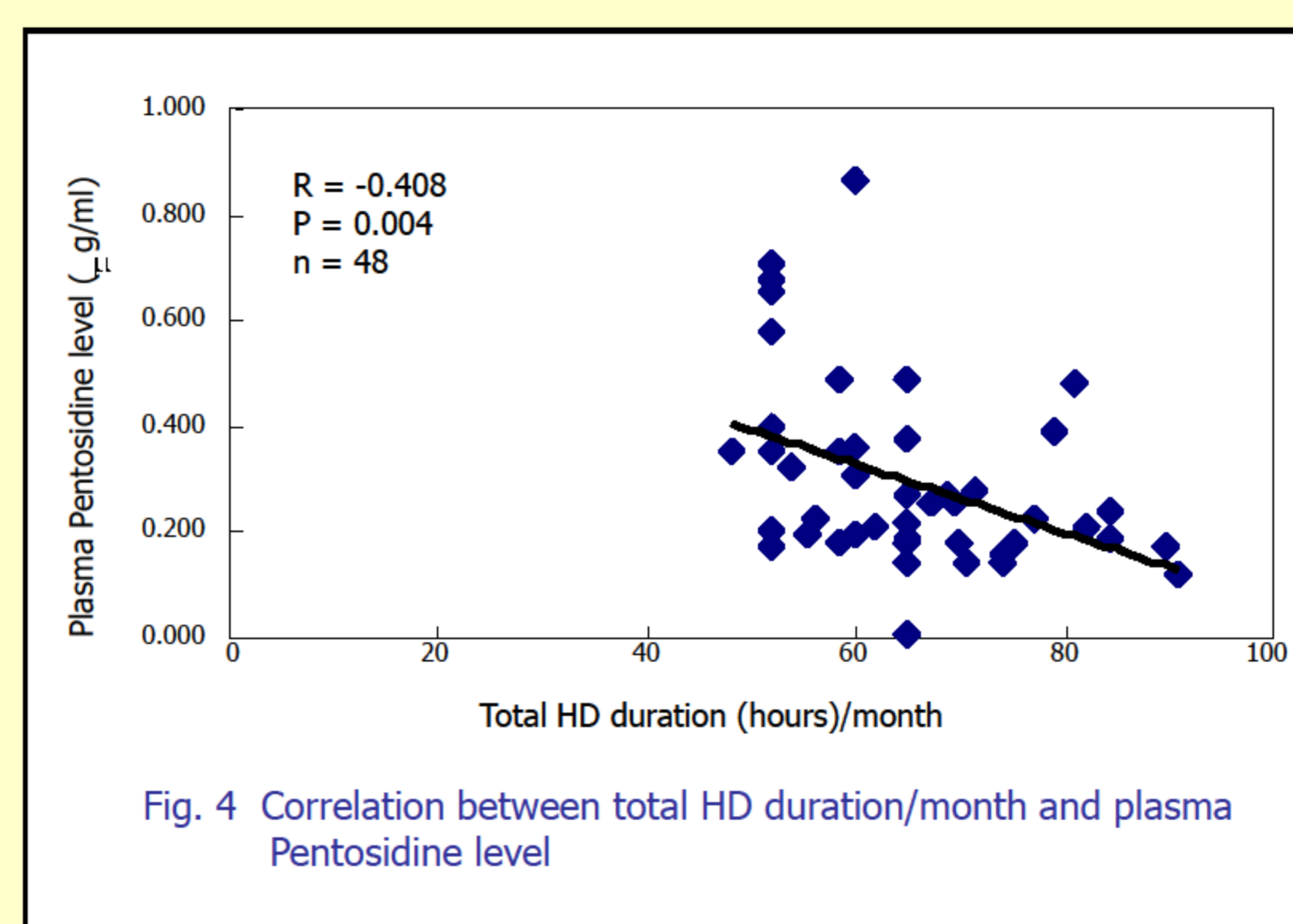
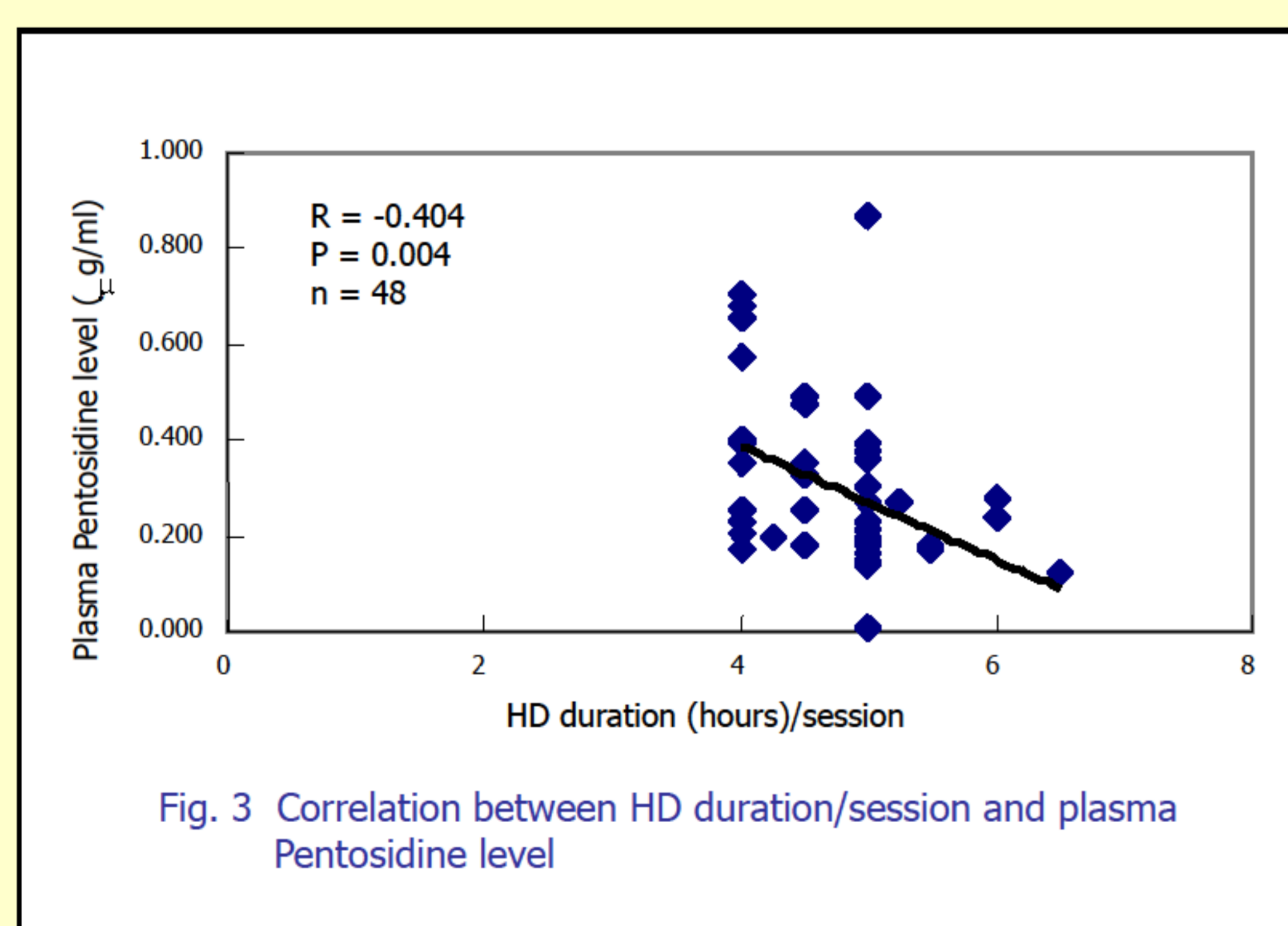
The statistical difference was determined with two-sided Student's t test. Differences of $P < 0.05$ were considered significant. Pairwise associations were examined with Pearson's correlation coefficient test.

RESULTS

- 1) The plasma Pent level was 0.225 ± 0.07 $\mu\text{g/ml}$ in the HHD group ($n=20$) and 0.348 ± 0.041 $\mu\text{g/ml}$ in the CHD group ($n=28$), significantly lower in the HHD group ($P=0.007$) (Fig. 1). Excluding DM patients, the plasma Pent level was 0.229 ± 0.008 $\mu\text{g/ml}$ in the HHD group ($n=18$) and 0.347 ± 0.046 $\mu\text{g/ml}$ in the hospital CHD group ($n=25$). Thus, plasma Pent was significantly lower in the HHD group ($P=0.019$) even when DM patients were excluded (Fig. 2).



- 2) Plasma Pent levels showed inverse correlations with HD duration/session ($R = -0.404$, $P = 0.004$) (Fig. 3), total HD duration/month ($R = -0.408$, $P = 0.004$) (Fig. 4), number of HD sessions/month ($R = -0.296$, $P=0.041$) (Fig. 5) and HDP ($R = -0.337$, $P = 0.019$) (Fig. 6). However, no correlation was seen with KT/V (Fig. 7).



CONCLUSIONS

Plasma Pent levels were significantly lower in the HHD group than in the CHD group, and this group may therefore have lower expression of dialysis complications.

This is thought to be due to the longer HD duration and more frequent HD in HHD.

