

## Anemia in patients with end-stage renal disease: a comparison between hemodialysis and peritoneal dialysis

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### INTRODUCTION & AIM

- Anemia is a common complication in patients with end-stage renal disease, mainly in those on dialysis. Several factors, such as consumed erythropoietin production, iron deficiency, and inflammation, contribute to anemia in these patients.
- The treatment of anemia differs between hemodialysis (HD) and peritoneal dialysis (PD).
- HD is associated with blood loss through the extracorporeal circuit, while PD patients generally have better residual renal function and do not experience blood loss. These differences suggest that PD patients may have better control of anemia.
- Since the care for patients on dialysis has improved in recent years and there are no Brazilian data in this field, we aimed to compare the prevalence of anemia between PD and HD patients.

### METHOD

- Design and objective: In this cross-sectional study we compared anemia prevalence (hemoglobin level < 10mg/dL) and levels of hemoglobin, ferritin, and the transferrin saturation index between HD and PD. In addition, we evaluated C-reactive protein and parathormone as possible counfounders.
- Hemoglobin variation for 1 year was also evaluated in each dialysis modality
- Study period and inclusion criteria: We included all patients who had been on dialysis for at least two months between September 2022 and September 2023. Anemia was defined as hemoglobin level < 10mg/dL.

### RESULTS & DISCUSSION

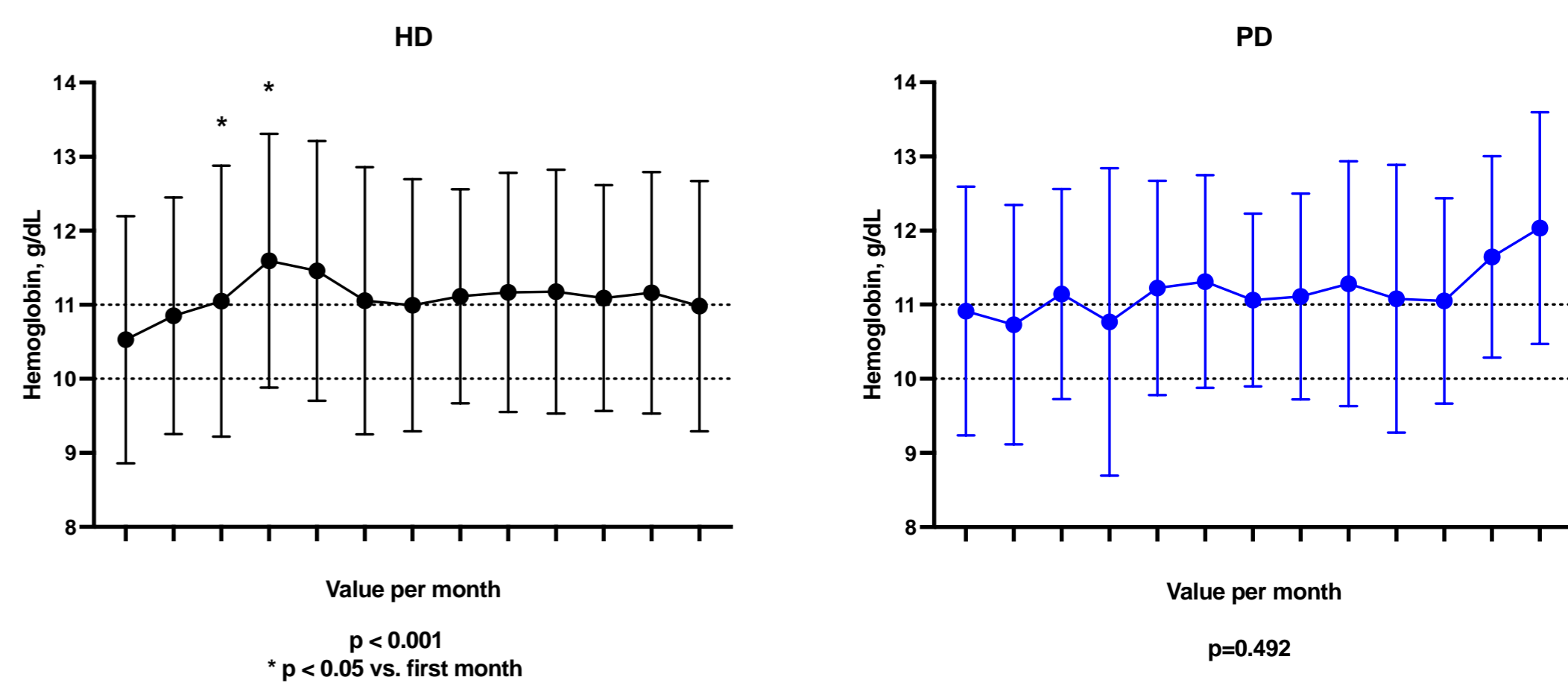
Characteristics of patients are described in Table 1

	PD N=58	HD N=146	p
Age, years	55 (40-67)	48 (36-63)	0.104
Male sex, %	48.3	52.7	0.565
Ethnicity, n (%)			0.012
White	53 (91.4)	114 (78.1)	
Non-white	4 (6.9)	32 (21.9)	
No declared	1 (0.7)	0	
Hemoglobin, mg/dL	11.0 ± 1.7	10.5 ± 1.7	0.069
Iron, µg/dL	48 (96-64)	70 (52-101)	0.505
Ferritin, ng/mL	121 (64-392)	372 (184-643)	0.008
Transferrin saturation, %	32.3 ± 13.4	37.7 ± 16.8	0.214
C-reactive protein mg/L	3 (2-8)	5 (2-15)	0.029
Albumin, g/dL	3.7 ± 0.5	4.0 ± 0.5	<0.001
Parathormone, pg/mL	405 (243-608)	290 (169-584)	0.077

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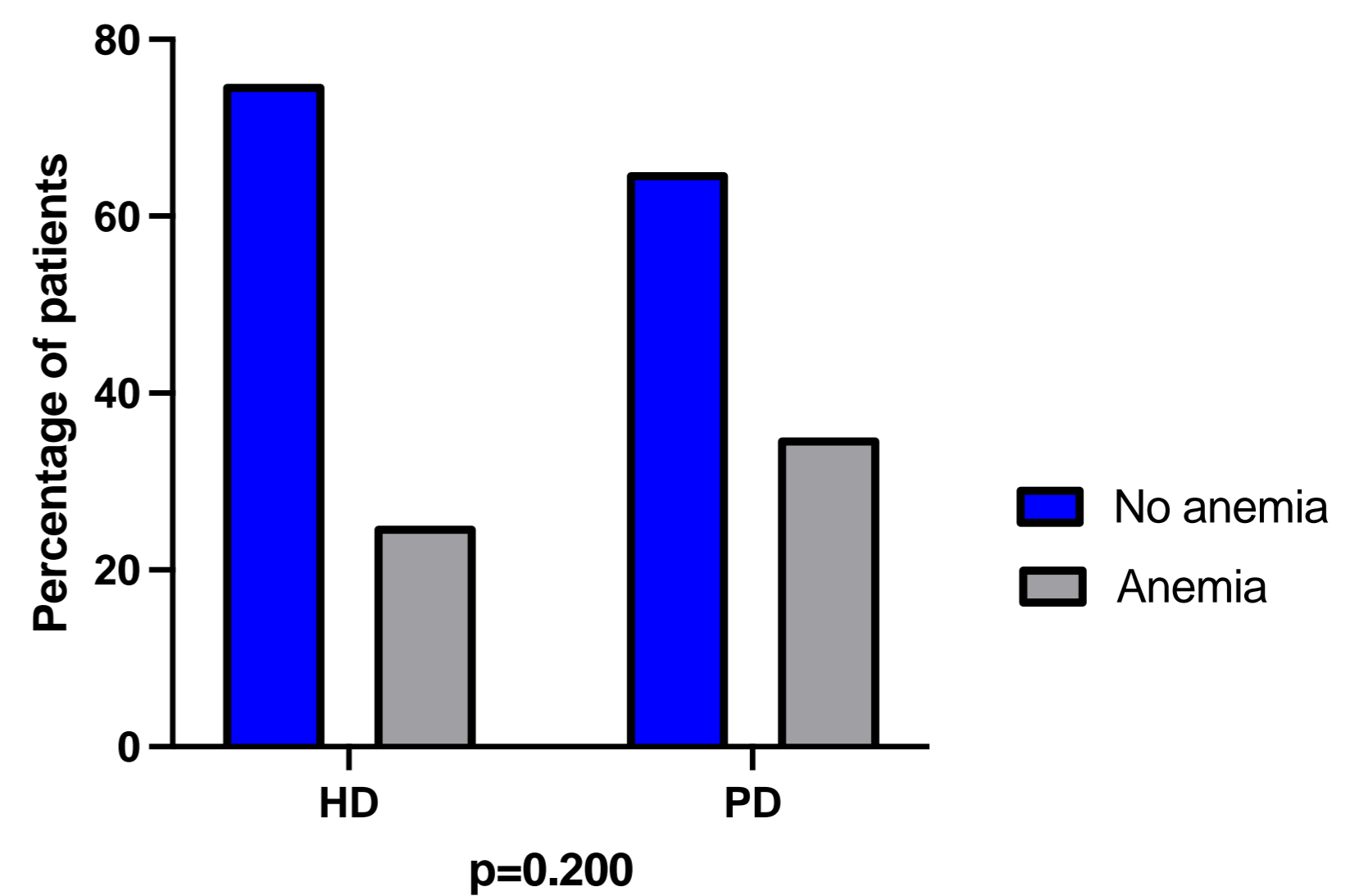
- Repeated measures over the year showed no significant change in hemoglobin levels among patients on PD (p=0.492), but not on HD (p<0.001), as show in Figure 1.

**Figure 1.** Variability of hemoglobin levels in patients on hemodialysis (black) and peritoneal dialysis (blue)



- The prevalence of anemia was similar between HD and PD (35.0% vs. 25.5%, respectively, p=0.200).Figure 2.

**Figure 2.** Prevalence of anemia in HD and PD.



### CONCLUSION

- ❖ We found a similar prevalence of anemia and hemoglobin levels between patients on HD and PD, despite higher levels of ferritin among patients on HD. This result suggests the need for a more intense supplementation of iron in patients on HD to target hemoglobin levels.

### FUTURE WORK / REFERENCES

- ❖ KIDNEY DISEASE - IMPROVING GLOBAL OUTCOMES. Available at: <https://kdigo.org/>. Accessed on: 2 Dec. 2023.
- ❖ Nerbass FB, Lima HN, Thomé FS, Vieira Neto OM, Lugon JR, Sesso R. Brazilian Dialysis Survey 2020. Braz J Nephrol 2022;44(3):349-357.