

Factors influencing postural balance in haemodialysis patients

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Introduction

Hemodialysis (HD) patients have a high incidence of falls that is related with hospitalizations and mortality (Tentori et al., 2014). Poor body balance may contribute to this problem and its understanding should help to design strategies to reduce falls in this population. Thus, it is important to study the factors that increase the propensity for falls in hemodialysis patients.

Objectives

To evaluate the factors that can influence postural balance in HD patients

Methods

Cross-sectional study including 53 patients. Balance was assessed using the Single Leg Stance Test (SLS). Patients were divided into 2 groups:

- **Good balance (n = 11):** within the reference range of the SLS test
- **Impaired balance (n = 42):** below the reference range of the SLS test

Groups were compared according to age, gender, BMI, body composition, diabetes, usual medication, dialysis vintage, hemoglobin, ultrafiltration rate and participation in an exercise programme. Patients that couldn't perform the SLS test or need walk assistance were excluded.

Results

As shown in graph 1, impaired balance group had a higher prevalence of **diabetes** (not reaching statistical significance), and were more prone to take **sedative drugs** ($p=0.031$). Patients participating in an **intradialytic exercise programme** had a better balance ($p=0.017$).

Impaired balance group also had a higher **dialysis vintage** (21.46 ± 8.23 versus 45.48 ± 4.71 months, $p=0.003$), a lower **lean tissue index** (15.15 ± 3.19 versus 12.98 ± 2.74 Kg/m², $p=0.029$) and a higher **fat tissue index** (10.71 ± 2.98 versus 15.99 ± 7.06 Kg/m², $p=0.008$). Despite not reaching statistical significance, there is an important difference in ultrafiltration volume between the two groups ($p=0.094$).

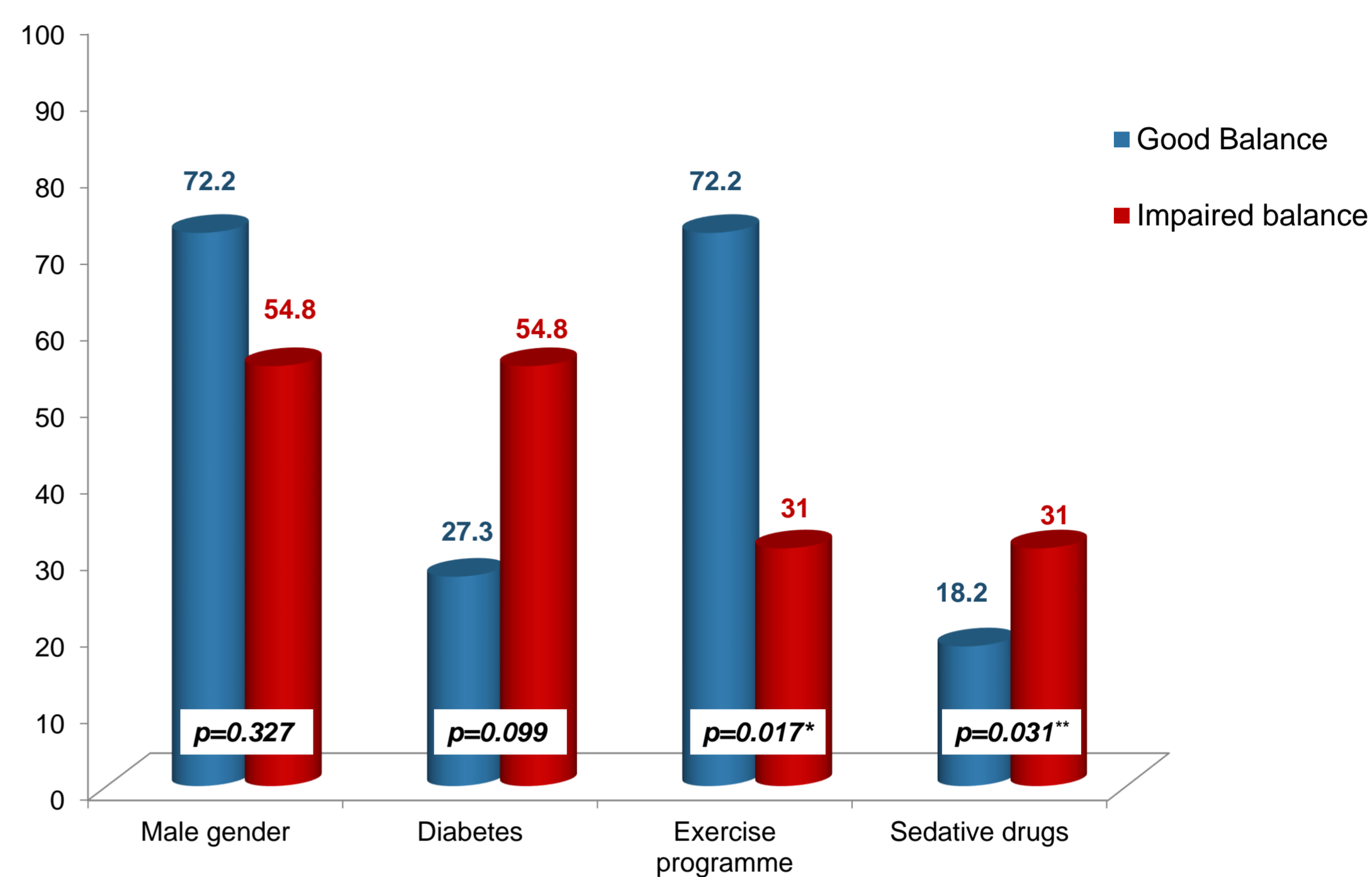
Conclusion

Body composition plays an important role in body balance. Special attention should be paid to patients under sedative drugs. Thus, we can say that strategies to improve body composition, such as exercise, may be useful to improve postural balance and prevent falls in HD patients.

References

1. Tentori, F., McCullough, K., Kilpatrick, R. D., Bradbury, B. D., Robinson, B. M., Kerr, P. G., & Pisoni, R. L. (2014). High rates of death and hospitalization follow bone fracture among hemodialysis patients. *Kidney international*, 85(1), 166-173.

Graph 1 - Qualitative characterization of the groups (%)



*Fisher's exact test with 95% significance; **Chi-square test with significance of 95%

Table 1 - Quantitative characterization of the groups (mean±SD)

	Good balance Mean/SD	Impaired balance Mean/SD	P value
Age (years)	61.92±4.55	69.79±2.04	$P=0.114$
HD Vintage (months)	21.46±8.23	45.48±4.71	$P=0.003^1$
Hemoglobin (gr/dL)	11.38±1.53	11.24±1.28	$P=0.776$
Ultrafiltration volume (L)	2090.91±686.23	2614.29±949.86	$P=0.094$
BMI (kg/m ²)	26.21±3.44	29.84±7.65	$P=0.127$
Lean Tissue Index (kg/m ²)	15.15±3.19	12.98±2.74	$P=0.029^2$
Fat Tissue Index (kg/m ²)	10.71±2.98	15.99±7.06	$P=0.008^1$

1 - Mann-Whitney U test with 95% confidence interval; 2 - T test for independent samples with 95% confidence interval