Long Nocturnal Dialysis: three distinct realities

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Introduction

Long nocturnal dialysis (LND) (3×7 hours/week) is a well-tolerated and effective treatment. Several studies have shown the benefits of LND, e.g. reduced morbidity and mortality as well as increased quality of life.

In Portugal, there are various LND programmes with different variables: haemodialysis (HD) / haemodiafiltration (HDF) and autonomous/interdependent. The last option differs from others, because all procedures are performed by the patient, independently and at night, at a HD clinic under the supervision of the nursing team and a nephrologist.

Objectives

- To compare treatment parameters: effective weekly treatment time, blood flow rate (Qb) and processed blood volume;
- To measure iron and erythropoietin stimulating agents (ESA) consumption in LND patients.

Methods

Retrospective, observational, multicentre study, over a period of 14 months.

Study population:

- LND-HD: 7 patients, 1 female, average age 46.57 years, time on HD: 75.86 months, average Age-Adjusted Charlson Comorbidity Index: 3.0
- Autonomous LND-HD: 8 patients, 3 female, average age 55.12 years, time on HD: 134.13 months, average Age-Adjusted Charlson Comorbidity Index: 4.8
- LND-HDF: 6 patients, male, average age 50.50 years, time on HD: 115.50 months, average Age-Adjusted Charlson Comorbidity Index: 4.0.

Results

Statistically different results obtained by non-parametric Kruskal Wallis H for LND-HD versus autonomous LND-HD versus LND-HDF with $p<0.05$ were:

- Effective weekly treatment time: 1,178.71(±31.88), 1,233.41 (±26.42), 1,204.92(±38.07) min/week
- Qb: 331.47(±26.45), 301.98(±10.89), 282.47 (±7.75) ml/min
- Processed blood volume: 389.17(±18.30), 372.30 (±12.42), 339.38 (±5.32) L/week
- Ferritin: 483.93 (±162.16), 673.98 (±162.17), 470.2833 (±95.60) µg/L
- Iron consumption: 0.90 (±0.87), 2.34 (±0.81), 3.30 (±0.99) µg/kg/month.

Groups were comparable regarding Kt/V in-line measurement [2.10(±0.42) versus 2.31(±0.39) versus 2.03(±0.26)] in fluid removal, erythropoietin consumption, haemoglobin, potassium, and phosphorus levels ($p>0.05$).

Conclusion

Groups with a higher mean age had a higher Age-Adjusted Charlson Comorbidity Index. On average, patients on LND-HD were younger and had a lower weekly treatment time and a higher Qb and processed blood volume compared to the other groups. The type of treatment and autonomy does not seem to influence other treatment parameters like Kt/V and fluid removal. Clinical parameters, e.g. erythropoietin consumption, haemoglobin potassium, and phosphorus levels, were also comparable between the groups.

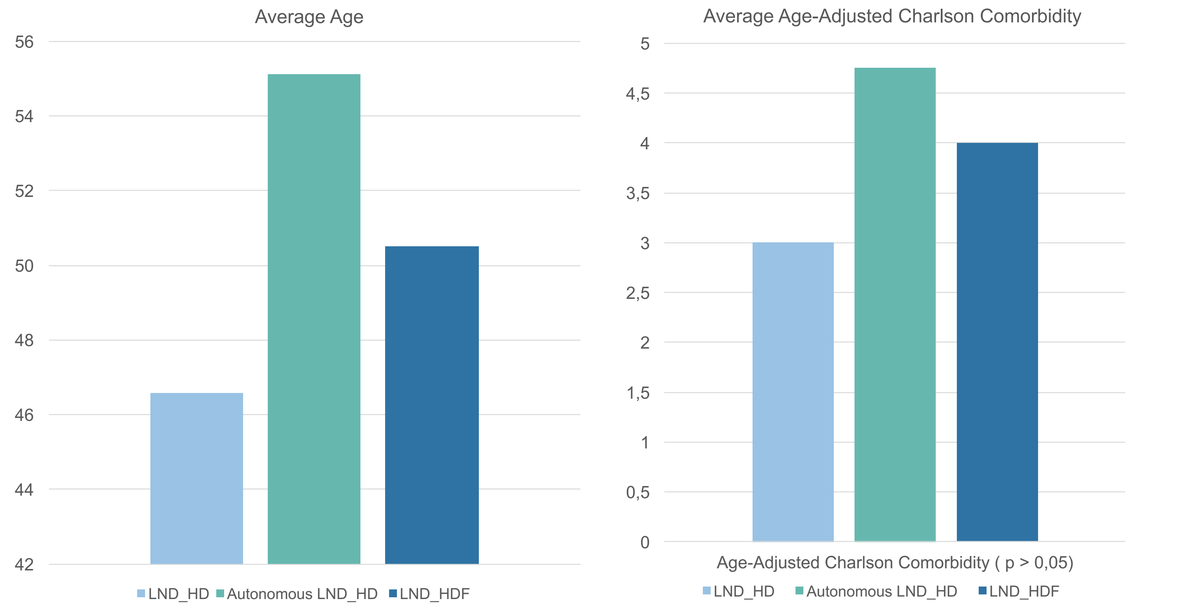

Figure 1: Comparing results between LND-HD, Autonomous LND-HD and LND-HDF: Average Age and Age-Adjusted Charlson Comorbidity Index

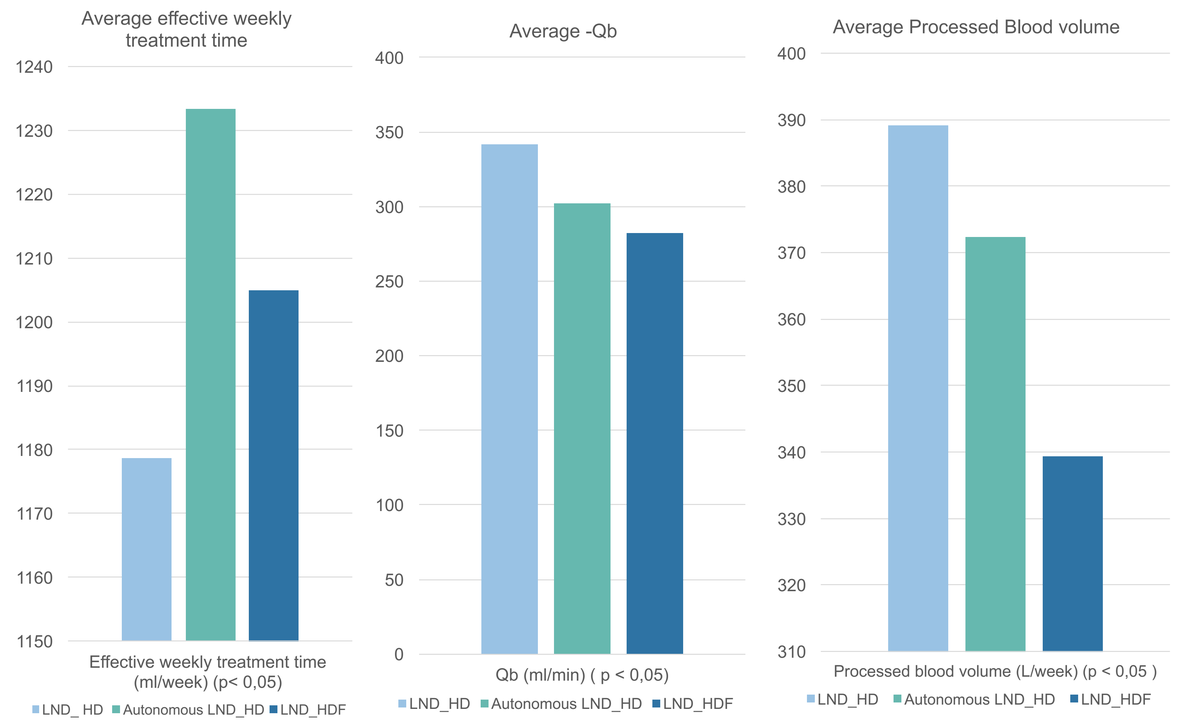

Figure 2: Comparing results between LND-HD, Autonomous LND-HD and LND-HDF: Average effective weekly treatment time, Qb and Processed blood volume

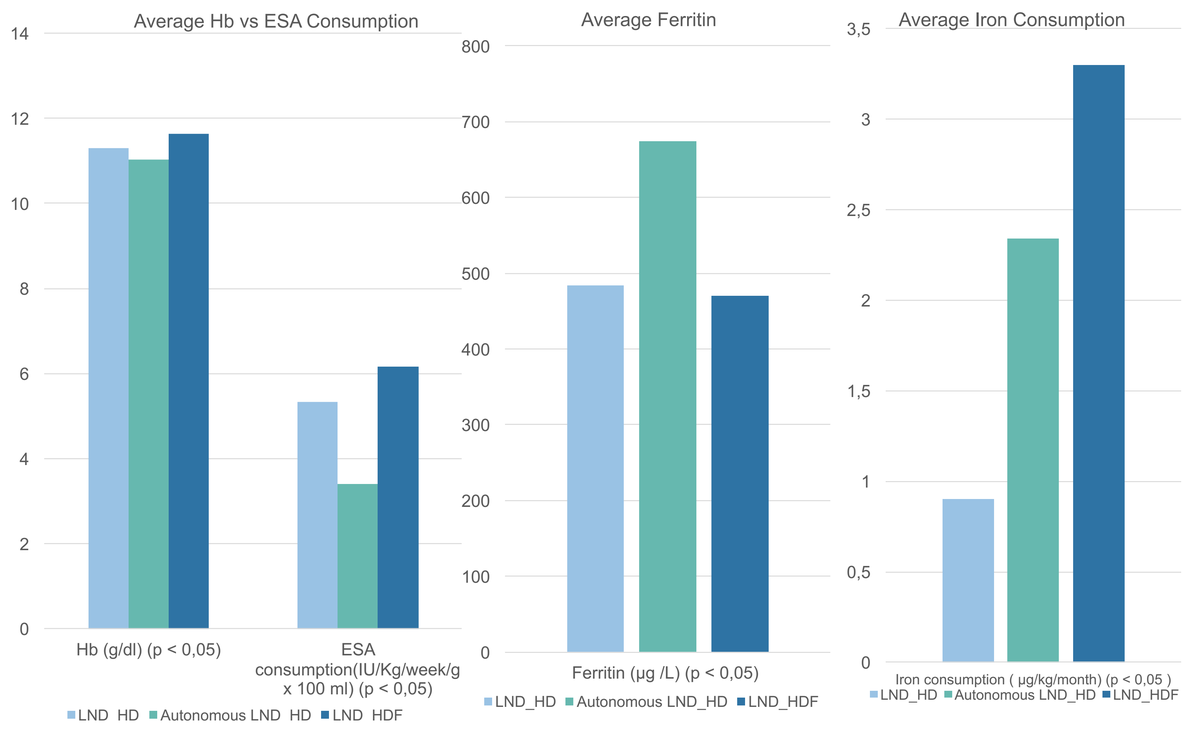

Figure 3: Comparing results between LND-HD, Autonomous LND-HD and LND-HDF: Average Haemoglobin vs ESA consumption and Ferritin values vs Iron consumption

References

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45th EDTNA/ERCA International Conference – Valencia, September 17-20, 2016