



ALDOSTERONE LEVELS IN PATIENTS ON HEMODIALYSIS: RELATIONSHIP WITH INSULIN RESISTENCE, BODY MASS AND ADIPOCITOKINES.

Fernández -Reyes MJ (1), Heras M (1), González MJ (2), Rodríguez O (2), Callejas R (1), Molina A (1), Rodríguez MA (1), Lopes V, Calle L (1).
(1) Department Nephrology, Segovia Hospital General, (2) Department Biochemistry, La Paz Hospital, Madrid, SPAIN

Background:

Patients with chronic renal disease (CKD) and dialysis are high incidence of insulin resistance. Recently it has been shown that serum aldosterone (SA) levels are correlated with insulin resistance; excess body fat and serum levels of adipocitokines.

Objective:

Establish SA levels on patients on hemodialysis (HD and its possible association with insulin resistance (HOMA), excess body fat (bioimpedance) and/or serum adipocitokines levels.

Patients and Methods:

28 no diabetic stable patients on HD, not taking ACE inhibitors/angiotensin receptor blockers. 18 patients were anuric. All measurements were done prior to the midweek HD session

Table 1. Sociodemographic, clinical and anthropometric characteristics

Age (years)	73.7 ± 13.3
Sex (% male)	53.6%
Heart disease history (%)	28.6%
Charlson Index (mediana and range)	8 (4-12)
Time on dialysis (months)	40.2 ± 40.8
24 hours urine volume (ml)	189±308 (0-1000)
Residual renal function (ml/min)	1.3± 3.1 (0-10)
Body weight (Kg)	64.2±12.9
Body mass index (BMI)*	26.2±4.6
Fat mass (kg/m ²)	14.3±5.8
Overhydration (liters)**	1.2±1.2
Systolic blood pressure/ Diastolic blood pressure (mmHg)**	136±27.8 / 68.6±12.3
KT/V	1.6±0.33

* BMI=weight (Kg)/ height²
**Before dialysis



Results:

- ▶ SA levels were above the normal range (1.17-23.6 ng/dl) in 53.6% of patients and none below it.
- ▶ PRA was above the normal range (0.23-3.32 ng/mL/h) in 21.4% of patients and below it in 35.7%
- ▶ Levels of SA and PRA had a normal distribution

Table 2. Means and medians values hormone tests

	Media ±DS	Median	percentil25/75
AS* (ng/dl)	79.1±106.1	28.1	10.4/98.6
PRA**(ng/ml/h)	2.15±2.9	1.05	0.16/3.1
Leptin (ng/ml)	18.3±23.1	7.8	1.8/27.8
Adiponectin (ng/ml)	34.0±22.3	29.1	20.6/37.0
HOMA-IR***	11.8±13.7	6.7	2.5/18.0

.AS= aldosterone levels (ng/dl) , **PRA= Plasma renin activity (ng/ml/h) HOMA-IR= Homeostasis model assesment index of insulin resistance = glucose (mmol/l)× insulin (mU/l)/22·5

Aldosterone levels differences and correlations

- ▶ There were **NOT** statistically significant difference in SA levels between: Anuric and non-anuric; Male and female; Presence and absence of myocardopathy .
- ▶ There were **NOT** statistically significant correlations of SA levels or PRA with: Urine volume or residual renal function; Dose or length of time on HD; Age or Charlson Comorbidity Index
- ▶ SA levels **WERE** correlated with :
ARP (r= 0.70; p< 0.0001)
HOMA index (r= 0.47; p=0.01)
Body fat mass in kg/m² (r=0.40; p=0.03)
Serum leptin levels (r=0.45; p= 0.01);
and negatively with Serum adiponectin levels (r=-0.37; p=0.05).

Multivariate lineal regression analysis model

The best model to explain SA levels included ARP and HOMA-IR (r=0.78 r²=0.61).

Conclusion:

SA levels are elevated in a high percentage of HD patients. Such elevation is independently associated with PRA and insulin resistance; and correlated with body fat mass; and serum levels of adipocitokine.