

## EFFECTIVENESS, SAFETY AND HEMODYNAMIC ASSESSMENT OF NEUROMUSCULAR ELECTROSTIMULATION IN RADIOCEPHALIC FISTULA

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### BACKGROUND

- Radio-cephalic fistula (RCAVF) is the gold standard vascular access for end-stage chronic kidney disease patients.
- Scarce results regarding neuromuscular electrostimulation (NMES) in RCAVF maturation and hemodynamic assessment have been reported
- Nevertheless, no articles are published regarding NMES in AVF maturation and their impact during haemodialysis (HD) sessions.

### OBJECTIVES

To assess the effectiveness, safety and hemodynamic assessment on RCAVF previously matured with a NMES programme.

### MATERIAL AND METHODS

An 8 weeks single-centre prospective study in RCAVF previously matured with a NMES programme.

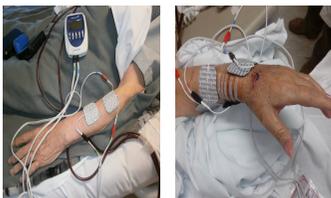


Fig. 1. Patient with electrodes placed on the skin underwent low-intensity electrical stimulation in the forearm muscles of the RCAVF upper limb during HD session.

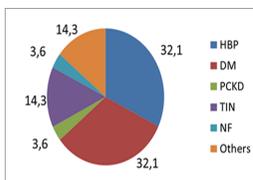
#### Analyzed data:

- Haemodynamic data
  - SBP(Systolic blood pressure)
  - DBP(Diastolic blood pressure)
  - PP (Pulse Pressure)
  - HR( Heart Rate)
- Medical or surgical RCAVF complications
- Clinical and DUS maturation,
- Haemodialysis parameters:
  - dry weight,
  - Ultrafiltration rate
  - HD adequacy parameters
- Antihypertensive treatment

### RESULTS

#### DEMOGRAPHIC DATA

11 ESG radiocephalic forearm fistula (RCAVF)  
82% men  
I. Charlson.  $8.7 \pm 3.9$   
Mean Age:  $65.7 \pm 19.2$



#### HAEMODYNAMIC DATA

528 haemodynamic measurements

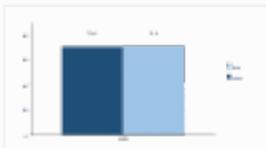
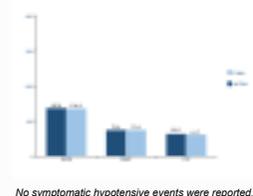
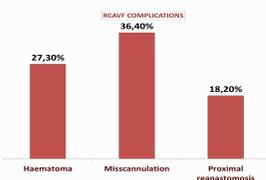


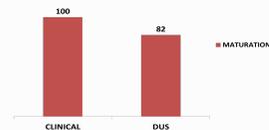
Figure 2. - No relevant changes in haemodynamic data were observed at the end of study.

#### RCAVF COMPLICATIONS



#### CLINICAL AND DUS MATURATION

MATURATION (%)



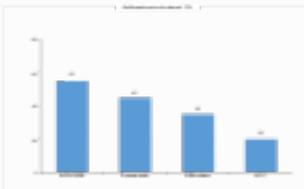
#### CLINICAL MATURATION

- VEIN PALPABLE, ANFRACUOUS
- SECTION > 500ml/min
- THRILL PALPABLE.

#### DUS MATURATION

- VEIN DIAMETER: 5-6mm
- DEPTH: 6mm
- HUMERAL ARTERIAL FLOW > 500ml/min

#### HAEMODIALYSIS PARAMETERS



	INITIAL	FINAL	P. VALUE
Dry weight	$72.7 \pm 12.6$	$72.1 \pm 12.4$	p 0.895

	INITIAL	FINAL	P. VALUE
UF rate	$607.6 \pm 24.4$	$652.1 \pm 22.5$	p 0.673

	INITIAL	FINAL	P. VALUE
KTv	1.45	1.54	0.119

\* p < 0.05 ( Baseline - 8 weeks)

No relevant changes in antihypertensive treatment, dry weight, ultrafiltration rate and HD adequacy parameters were observed.

### CONCLUSIONS

A formerly NMES programme is a safe, well tolerated and effective technique to assess RCAVF maturation process in our patients.

These results reinforce the role of NMES programme in the short-term follow up RCAVF maturation process.

Nevertheless, further studies are required to confirm the potential effect of NMES in the vascular access maturation process.