Factors that correlate with the severity of renal involvement in patients with Fabry disease

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INTRODUCTION AND AIMS: Renal involvement is an important feature of Fabry disease. We evaluated the presence of Fabry nephropathy and we analyzed factors that correlate with kidney involvement in patients with Fabry disease confirmed by genetic test.

METHODS: We assessed renal function using serum creatinine and cystatin C, albuminuria and proteinuria. Chronic kidney disease was defined as eGFR < 60 ml/min/1.73 m2 and/or urinary albumin/creatinine rate ≥ 30 mg/g. Kidney biopsy was performed in selected patients for diagnostic and evaluation of disease extension. Renal biopsy specimens were analyzed in light microscopy, immunofluorescence and electron microscopy. Echocardiographic evaluation was performed in order to evaluate left ventricular volumes at end-diastole and end-systole, left ventricular function and left ventricular mass (LVM). LVM was indexed to body surface area to obtain the LVM index (LVMi). Statistical analysis was performed using IBM SPSS Statistics Version 21.

RESULTS: Between March 2015 and December 2017 we examined 26 patients (mean age, 40.2 years; range, 15-73 years), 14 male and 12 female, 19 patients (73%) showed renal manifestations of Fabry disease. 13 patients (80%) presented eGFR < 60 ml/min/1.73 m2. Two patients presented with end stage renal disease at a mean age of 27 years and had received a renal transplant. Proteinuria was present in 17 patients (65%), and one patient had nephrotic proteinuria. Nine patients (34.6%) performed kidney biopsy. 16 patients (61.5%) had cardiac involvement and 21 patients (80.7%) presented neurologic manifestations. Only eight patients received enzyme replacement therapy (ERT) at first evaluation in our clinic. After the complete evaluation of Fabry organ involvement, ERT was initiated in another 10 patients. The result of kidney biopsy contributed decisively to the therapeutic decision. The severity of renal involvement in patients with FD has been correlated with the age of diagnosis of Fabry disease (p=0.04), elevated serum uric acid (p=0.0001), proteinuria (p=0.014), iPTH (p=0.001), increased LVMi (p=0.036), the presence of arterial hypertension (p=0.006), and stroke history (p=0.04).
CONCLUSIONS: Our experience showed that kidney biopsy is an important tool to assess the kidney involvement and to establish the indication for initiating ERT. In conclusion, besides increasing age at diagnosis, the severity of renal involvement was associated with the severity of proteinuria, hypertension, increased LVMi and stroke history.