Screening for Fabry Disease Among Patients with Chronic Kidney Disease in Clinical Hospital Center Rijeka

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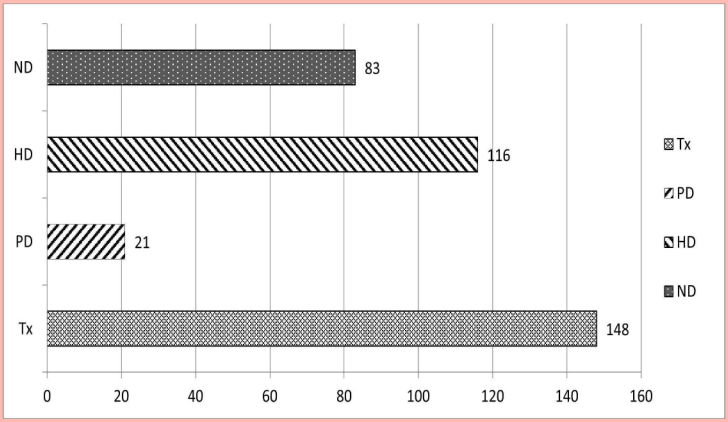
Introduction

Fabry disease (FD) is a rare X-linked lysosomal storage disorder that results from deficiency in α-galactosidase A (α-Gal A) enzyme activity. The hypothesis of our research was that FD could be an unrecognized cause of chronic kidney disease (CKD) in patients with severely decreased kidney function and patients on renal replacement therapy.

Metodology

We have screened 368 CKD patients, from June 21st to September 30th, 2018, with an estimated glomerular filtration rate less than 30 mL/min/1,73m2, including patients on hemodialysis or peritoneal dialysis and patients with a kidney transplant. α-Gal A was determined using dried blood spot tests. We have additionally analyzed globotriaosylsphingosine (lyso-GL-3) concentration in female patients. In patients with enzyme activity less than 1.2 μmol/L/h and/or lyso-GL-3 levels higher than 3.5 ng/mL genetic testing was conducted.

We screened 368 CKD with eGFR less than 30 mL/min/1,73m2, including patients on HD or PD and patients with kidney transplant (Figure 1).



Results

Two male patients were diagnosed with FD. Genetic testing confirmed the pathogenic mutation (c. [540G>C] (p. [L 180F]) in both patients. Laboratory testing showed low α-Gal A activity in both patients, while only the first patient had high concentrations of lyso-GL-3 marker. Laboratory testing also deviated in other patients but without a confirmed genetic mutation. Two male patients had low α-Gal A activity, 1.1 μmol/L/h and 1.0 μmol/L/h respectively. One female patient had borderline enzyme activity of 1.2 μmol/L/h and normal concentration of lyso-GL-3. Five female patients had high concentrations of lyso-GL-3 marker with normal α-Gal A activity. Genetic testing was performed in all eight patients and did not confirm pathogenic mutations for FD.

Conclusion

In this study we confirmed the existence of a pathogenic mutation (c. [540G>C] (p. [L 180F]) responsible for FD in the population of CKD patients in our center. Therefore, given the availability and benefit of early initiation of therapy, it is advisable to consider FD as a cause of CKD.

Keywords: Fabry disease; screening; chronic kidney disease; α-galactosidase A; lyso-GL-3