Identification of a genetic mutation associated with steroid-resistant nephritic syndrome

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Patients with nephritic syndrome exhibit an array of symptoms that are associated with loss of kidney function, including excess protein in urine, swelling, and albuminuria. Many nephritic syndrome patients respond well to treatment with steroids; however, subsets of patients are resistant to steroid treatment and are at high risk of kidney failure. Recent studies have identified single gene mutations that are associated with development of steroid-resistant nephritic syndrome; however, these mutations account for approximately half of all steroid-resistant cases.

In this issue of the *Journal of Clinical Investigation*, Friedhelm Hildebrandt and colleagues at Boston Children's Hospital identified mutations in gene encoding the aarF domain containing kinase 4 (ADCK4) in 15 individuals with steroid-resistant nephritic syndrome from 8 different families.

The authors found that cells isolated from patients with *ADCK4* mutations had reduced levels of coenzyme Q_1 (CoQ_{10}), and decreased mitochondrial respiration.

Furthermore, one patient with ACDK4-assocatiated steroid-resistant nephritic syndrome showed improvement following treatment with CoQ_{10}.

In their companion commentary, Laura Malaga-Dieguez and Katalin Susztak of the University of Pennsylvania suggest that CoQ_{10} treatment may be promising for a subset of patients with steroid-resistant nephritic syndrome.

More information: ADCK4 mutations promote steroid-resistant nephrotic syndrome through CoQ10 biosynthesis disruption, *J Clin Invest.* DOI: 10.1172/JCI69000
ADCK4 "reenergizes" nephrotic syndrome, *J Clin Invest.* 2013;123(12):4996–4999. DOI: 10.1172/JCI73168

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