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On the Cover

What's the diagnosis?

A 41-year-old Caucasian man with long-standing HIV was recently evaluated for elevated serum creatinine. He has been exposed to multiple combined anti-retroviral therapy (cART) agents, some of which are known to cause kidney injury, including tenofovir. He has also been on cART known to cause elevations in serum creatinine, including cobicistat. A recent ECG showed evidence of left ventricular hypertrophy. A follow-up echocardiogram re-demonstrated LVH, with MRI findings suggestive of Fabry Disease. Leukocyte alpha galactosidase level was measured at 0 (normal ≥ 23.1 nmol/hour/mg protein). He was started on agalsidase beta infusions every 2 weeks. The patient's serum creatinine was 1.7 mg/dL in January of 2017; to evaluate any potential kidney involvement, he was referred to Nephrology. A percutaneous kidney biopsy was performed, showing characteristic foamy, lipid-laden cells in glomeruli, tubules, and interstitium.

Light microscopy (H&E) shows a glomerulus with large foamy-appearing podocytes (arrows). Electron Microscopy shows renal tubular epithelium with classic lipid inclusion bodies characteristic of Fabry Disease.

Fabry Disease is an X-linked lysosomal storage disorder caused by a mutation in the GLA gene, leading to a deficiency in the enzyme alpha-galactosidase A. This can lead to damage in multiple organs including the heart, brain, and kidney due to cellular glycosphingolipid accumulation. Diagnosis is made based on serum testing in men and genetic analysis in women. In patients with multiple potential causes for renal dysfunction, which in this gentleman includes HIV and HIV-related medications, in addition to Fabry disease, it is essential to perform kidney biopsy. (Images and text provided by Steven Menez, Lois Arend and Mohamed Atta from Johns Hopkins School of Medicine, Baltimore, Maryland)

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