Severe Flare Of Hypothyroidism With The Onset Of Nephrotic Syndrome
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Introduction

- Most thyroid hormones are bound to carrier proteins. The major serum thyroid hormone-binding proteins are thyroxine-binding globulin, transthyretin, and albumin. In nephrotic syndrome, an increased excretion of these proteins into the urine can lead to hypothyroidism in patients with subclinical or treated hypothyroidism.
- We present a case of previously well-controlled hypothyroidism who presented with severe symptoms of hypothyroid due to nephrotic syndrome.

Case Description

- An 80-year-old woman presented with a 2 month history of worsening bilateral lower extremity swelling, fatigue, and a 20 lb weight gain. She had a 20 year history of well-controlled hypothyroidism.
  - Physical examination: BP 164/76, 3+ pitting edema.
  - Labs: normal BMP with Cr of 0.9 mg/dl, albumin of 1.7 g/dl, proteinuria of 6.6 gm/24 hour, TSH of 91 μIU/ml.
  - Renal ultrasound was unremarkable.
  - Hepatitis panel, ANCA, and complement levels were all normal.
  - Kidney biopsy: minimal change disease, see Figure 1.
- She was diagnosed with nephrotic syndrome and severe hypothyroidism. She was started on amlodipine/benazepril 5/40mg daily, lasix 20 mg daily, and predisone 60 mg daily. Her levothyroxine dose was increased from 125 to 150 mcg daily.
- At the follow-up visit, her lower extremity edema and fatigue were much improved.

Results

Figure 1. Histopathology images of kidney biopsy: (A) The glomerulus in this H&E section looks normal without an increase in cellularity or an increase in basement membrane thickness. (B) Periodic-acid-Schiff (PAS) staining of the glomerulus shows normal mesangial cellularity and matrix. (C) Electron microscopy shows effacement of the foot processes of visceral epithelial cells (podocytes).

Discussion

- Cases of worsening hypothyroidism in patients with nephrotic syndrome have been previously reported in the literature. Chandurkar et al. (2008) have used a modified blood test to measure urinary thyroxin levels. They found a positive correlation between urinary total protein and urinary thyroxin levels in 22 patients with proteinuria. The loss of thyroid-binding hormone in the urine is usually compensated in individuals with normal thyroid function. However, in patients with subclinical or treated hypothyroidism, urinary losses of thyroxin may result in symptomatic hypothyroidism.

References: