IgG4-Related Kidney Disease: A Case of a Systemic Disease Isolated to the Kidney

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INTRODUCTION

- Immunoglobulin G4 related disease (IgG4-RD) is a largely underestimated systemic disease characterized by lymphoplasmacytic infiltrations that can form tumor-like masses in affected organs.
- It is often misdiagnosed as malignancies, infectious and inflammatory conditions.
- IgG4-RD tubulointerstitial nephritis (TIN) is the most common renal manifestation but is usually identified in the presence of extra-renal disease. We present a case of IgG4-RD with isolated renal involvement.

CASE PRESENTATION

A 70-year-old Hispanic man with benign prostatic hyperplasia, hypertension and coronary artery disease presented to the ED with malaise and a near syncopal episode. He reported 30 pounds of unintentional weight loss and intermittent chills. Laboratory evaluation revealed laboratory abnormalities consistent with IgG4-RD.

Labs:

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<th>Cr Baseline</th>
<th>BUN</th>
<th>Na</th>
<th>CO2</th>
<th>Alb</th>
<th>Hb</th>
<th>k/λ</th>
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<tbody>
<tr>
<td>Cr</td>
<td>6.2 mg/dL</td>
<td>79 mg/dL</td>
<td>132 mmol/L</td>
<td>14 mmol/L</td>
<td>2.8 gm/dL</td>
<td>10.7 gm/dL</td>
<td>2.47 (0.262-1.65)</td>
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<tr>
<td>IgG4</td>
<td>1170.9 mg/dL (Range 4-180)</td>
<td>1438.0 mg/dL</td>
<td>105 mg/dL</td>
<td>UA-RBC</td>
<td>30 mg/dL</td>
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<tr>
<td>IgE</td>
<td>1.4</td>
<td></td>
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<tr>
<td>UA-Pr</td>
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<td>30</td>
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<tr>
<td>Pr/Gr</td>
<td></td>
<td></td>
<td>Normal</td>
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<td>C3/C4</td>
<td>0.87</td>
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<td>ANA</td>
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Imaging and Renal biopsy: Renal ultrasound was normal. Biopsy revealed widespread tubular atrophy and tubulo-interstitial nephritis. The interstitium contained infiltrates of lymphocytes, plasma cells, neutrophils and eosinophils in a storiform pattern of fibrosis. Antibodies to IgG4 were diffusely positive in plasma cells. Electron microscopy revealed a multinucleated giant cell in the interstitium. PET scan was negative for extra renal disease.

Hospital Course: His hospital course was complicated by NSTEMI which was managed medically due to his renal dysfunction. He was started on prednisone 40mg daily and his Cr improved to 3mg/dL.

Figure 1: A- PAS image (200x magnification) shows intact glomeruli (arrows) surrounded by an inflammatory tubulointerstitial process. B- Higher power (H&E 400x magnification) shows abundant numbers of plasma cells. C- IgG4 staining (400x) shows abundant IgG4 positive plasma cells at well over 40 cells/high power field.

DISCUSSION

- IgG4-RD has a variable presentation and 15% of patients have renal involvement. This case illustrates the kidney may rarely be the only clinical manifestation of the systemic disease.
- IgG4-RD is now understood to have an inflammatory phase followed by consequent development of fibrosis.
- Although serum IgG4 levels aid diagnosis they seem to be an epiphenomenon rather than pathogenic and may be helpful in evaluating response to treatment.
- Experts recommend induction corticosteroids as a first line treatment followed by a prolonged taper.

CONCLUSION

- IgG4-RD with isolated renal involvement is rare. Early recognition is crucial as it is highly treatable.
- How clinical phenotypes of IgG4-RD affect patient management and prevention of disease is unknown.
- Advancing knowledge of pathophysiology has identified many novel therapeutic targets and steroid-free immunomodulating regimens are under investigation.

REFERENCES

- Lanzillotta M, Mancuso G, Della-Torre E. Advances in the diagnosis and management of IgG4 related disease. BMJ. 2020;369:m1067