

C1q Nephropathy in Association with Deforming Arthritis

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Abstract

Background and Aims: C1q nephropathy (C1q-N) is an uncommon condition characterized by predominant mesangial complement-C1q deposition. It commonly presents as a nephrotic syndrome in young adults. Despite of many histologic similarities with lupus nephritis there were no clinical or laboratory findings of SLE in this patient who had C1q-N associated with joint involvements.

Keywords: C1q nephropathy, lupus nephritis, rheumatoid arthritis, nephrotic syndrome

Introduction

C1q nephropathy (C1q-N) is an uncommon glomerulonephritis characterized by predominant mesangial complement-C1q deposition (1). In some studies it is reported a good prognosis (2). Others believe that C1q-N belongs to the pathological spectrum of focal segmental glomerulosclerosis (FSGS) and presents as a steroid-resistant nephrotic syndrome in young adults (3). Pathologically it has some resemblance with lupus nephritis, but these patients have no clinical or serological evidence of systemic lupus erythematosus (SLE) (4). There is also an undecided term of “seronegative lupus nephritis”. It tries to describe a situation in which renal histology is compatible with SLE but there is no past or present evidence of either clinical or serological SLE. A significant proportion of these patients eventually evolve into SLE. Some believe that C1q-N is a better definition for those seronegative lupus nephritis cases that never develop SLE (4).

Here we report a case of C1q-N with joint involvement. As far as we know this is the first case report of C1q-N accompanied with arthritis.

Case Report

A 26-year-old female was admitted because of renal dysfunction and generalized edema. She had history of joint pain and irregular prednisolon self-administration for 11 years. On Physical examination she was ill- looking and pale. Blood pressure: 140/100 mm/Hg, pulse rate; 84/min. There wasn't any tenderness and swelling on her large joints. She was complaining from morning stiffness persisting less than half an hour. Proximal inter-phalangeal joints (PIP) of fourth and fifth phalanxes were inflamed. Flexion contraction of PIP and hyperextension of distal inter-phalangeal joints (DIP) of the fifth phalanxes were visible bilaterally (Boutoniere deformity) (Figure 1). Wrist and axial joints were normal. There was no history of malar rash, photosensitivity, oral ulcerations

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Received: 13 Mar 2009
Accepted: 7 Apr 2009



Figure 1. Bilateral Flexion contraction of PIP and hyperextension of distal interphalangeal joints (DIP) of the fifth phalanges (Boutonniere deformity)

and Raynaud's phenomena. Rheumatoid nodules and vasculitis ulcer were absent. Laboratory examination revealed a white cell count: 8500 / μ l, hemoglobin: 9.9 mg/dl, platelets: 296000/ μ l, serum creatinine level: 7.2 mg/dl, fasting blood glucose: 86 mg/dl, Na: 138 meq /l, K: 5.4 meq /l, serum calcium: 7.4 mg/ dl, serum phosphorus: 4.3 mg/ dl, CRP: 1+, alkaline phosphatase: 142 IU/L (77-307). Anti phospholipid IgG/IgM and anti-cardiolipine IgG/IgM were negative. Serum complement C3: 90 mg/dl (70-170), C4: 51mg/dl (15-55) and CH50:70 mg/dl (50-150). Serum albumin level: 2.6 g/dl Urine analysis revealed; 3+ proteinuria, 1+ hematuria and 24 hours urine collection revealed; 3600 mg/day proteinuria. Frequent laboratory examination revealed negative results for Rheumatoid factor (RF), anti-nuclear antibody (ANA) and anti-dsDNA and Anti-nuclear cytoplasmic antibodies (P and C-ANCA). Antibody against cyclic citrullinated peptide (CCP): 5 u/ml (<15 Negative). Anti-Ro (SS-A): 5 U/ml (<20 Negative), Anti-Smith antibody: 2 U/ml (<20

Neg), Anti-SSB:5 U/ml(<20 Neg). Serologic test for hepatitis B (HBS-Ag), hepatitis C (Hcv-Ab) and HIV were negative. Radiography of the hand revealed osteopenia in metacarpophalangeal joints (MCP). Renal ultrasound disclosed nearly normal sized kidneys with increased Echogenicity. Light microscopy examination of the kidney biopsy disclosed mesangial hypercellularity, focal segmental glomerulosclerosis (FSGS) appearances and glomerular capillary walls thickening recognizable as 'wire loops'. Immunofluorescence microscopic study revealed a dominant staining for C1q (3+) and weak staining for IgG (1+) and C3 (1+). Methylprednisolon pulse 500 mg/IV daily for three days was administered and followed by oral prednisolon. She had not any improvement and finally hemodialysis was started after three months. After eight months on hemodialysis she received a living unrelated renal transplantation.

Discussion

The patient had a characteristic renal histology of C1q-N. Deforming arthritis of the small joints was an additional manifestation that we found in this patient. This case denote us the possibility of existence of intermediary conditions that are not explainable by pure C1q-N.

What we could name this patient? Clinical and laboratory features were not compatible with rheumatoid arthritis (RA). Mesangial glomerulonephritis is a frequent finding in RA patients who present with haematuria and/or proteinuria (5). These patients have high titers of serum rheumatoid factor and IgM but not C1q which is the predominantly deposited mesangial immunoglobulin (5). Intense C1q immuno-staining accompanied with other immunoglobulin deposition (full house pattern) is a frequent finding in lupus glomerulonephritis. (4).The term of SLE also should be avoided because she had no clinical or serological evidence of SLE over a prolonged period of time.

C1q is the initiator of the classical complement pathway and belongs to the family of proteins known as collectins. It resembles to mannose binding lectin (MBL) that has an important role in innate immunity(6).There are little evidences that the C1q deposition is directly pathogenic (4). Binding of C1q with immunoglobulines activates the complement system. Serum complement levels are normal in C1qN. It has been reported in association with Gitelman syndrome, chromosome 13 deletion and severe atopic dermatitis (7, 8).

Concomitant occurrence of C1q-N and BK virus nephropathy has been reported in a renal allograft (9).

Finally, lack of electron microscopic investigation is the limitation of our report.

Conclusions

We propose that C1q nephropathy is an under-

recognized clinico-pathological entity. Further studies are needed to define its histological and clinical features.

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