Case Report

Lupus Cystitis in Association with Severe Gastrointestinal Manifestations in an Adolescent

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ABSTRACT. Lupus cystitis is a rare interstitial inflammatory disease of the bladder seen in systemic lupus erythematosus that usually occurs in association with gastrointestinal manifestations, and occasionally with central nervous system involvement. There are few reported pediatric cases. We describe this entity as the presenting manifestations of lupus in an adolescent female. (J Rheumatol 2005; 32:178–80)

Key Indexing Terms:
SYSTEMIC LUPUS ERYTHEMATOSUS
INTERSTITIAL CYSTITIS
BOWEL EDEMA
ADOLESCENT

Urinary bladder involvement in systemic lupus erythematosus (SLE), aside from the presence of a urinary tract infection and cyclophosphamide induced hemorrhagic cystitis, is uncommon. Other causes of bladder involvement include neurogenic dysfunction due to transverse myelopathy, inflammatory polyneuropathy, and unusual infections such as tuberculosis[1]. Less common is the entity of lupus cystitis, a chronic interstitial form of cystitis specific to SLE. This condition often occurs in association with gastrointestinal (GI) and occasionally central nervous system (CNS) manifestations[2,3]. There are few reports of lupus cystitis, and it is particularly rare in the pediatric literature. We describe this unusual entity in an adolescent female.

CASE REPORT

A previously well 16-year-old girl presented to the emergency room at Montreal Children's Hospital, a tertiary referral center, with a 2 day history of nausea, anorexia, abdominal pain, vomiting, and diarrhea. She was afebrile; however, she had rebound tenderness of her abdomen. Laboratory investigations showed only lymphopenia (lymphocyte count 1.0×10^9/l, total white blood cell count 5.3×10^9/l) and trace proteinuria. Aside from a small amount of free fluid, an ultrasound examination of the abdomen was normal. She was admitted to hospital.

With worsening symptoms, a repeat abdominal ultrasound was done. An increase in free fluid, multiple fixed thickened small bowel loops in the right lower quadrant, and grade II hydronephrosis were noted. A laparotomy to rule out appendicitis revealed a normal appendix. Postoperatively her abdominal pain improved; however, a few days later she developed vomiting, profuse watery diarrhea with incontinence, severe urinary frequency, tachypnea with pleural effusions, ascites, pancreatitis, and hepatitis. Computer tomographic (CT) scan of the abdomen showed grade III hydronephrosis (Figure 1) and irregular bladder wall thickening (Figure 2), as well as generalized gastric (Figure 3) and intestinal edema in keeping with the endoscopy and colonoscopy findings. Despite this, superficial biopsies of the bowel showed only areas of mild inflammation, with negative cultures and staining for viruses. Investigation for serositis revealed a white blood cell count of 3.0×10^9/l, lymphocytes of 0.6×10^9/l, Coombs' positive anemia with hemoglobin of 113 g/l, decreased C3 (0.38) and C4 (0.06), antinuclear antibody titer of 1:640, DNA binding 43%, and antibodies to Sm. A diagnosis of SLE was made, with evidence of severe multisystem disease. During the course of her 6 week admission, she developed worsening proteinuria and hematuria, with class III lupus nephritis on biopsy.

Treatment with intravenous pulse methylprednisolone over 5 days for a total of 2.5 g was followed by daily methylprednisolone 1 mg/kg/day. Resolution of diarrhea occurred within one week. Azathioprine and hydroxychloroquine were added. Urinary symptoms improved progressively. A repeat CT scan at 11 weeks showed only mild hydronephrosis, with resolution of all prior findings. At the 5 month followup, all symptoms of the initial presentation had effectively resolved. However, the development of progressive anxiety and difficulty concentrating prompted investigations for CNS disease.

DISCUSSION

We describe the unusual presentation of a 16-year-old girl with lupus cystitis to highlight this entity as a possible presentation of SLE. We draw attention to the unique association of this chronic interstitial cystitis with severe GI manifestations. To date, fewer than 50 cases of lupus cystitis have

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Submitted February 4, 2004; revision accepted July 5, 2004.

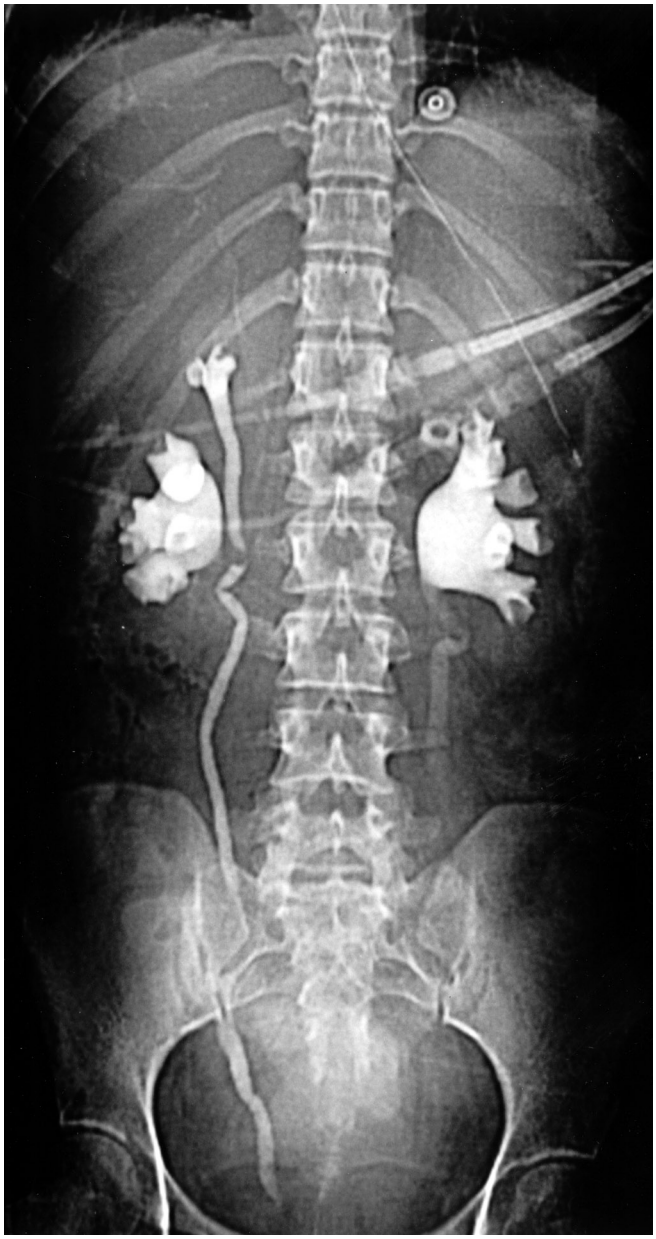

Figure 1. Infused CT scan of the abdomen, scout view, reveals bilateral moderate hydronephrosis/hydroureter of both kidneys; incidental finding of duplex collecting system on right.

been described in the English language literature, only 6 of these being pediatric[1,2,4-7]. About 80% have associated gastrointestinal manifestations[2].

A retrospective chart review by Min, *et al* of 413 patients seen at one adult center revealed only 5 cases of lupus cystitis, indicating a prevalence of 1.2%[2]. All had associated GI manifestations. The cases described, as with our patient, had paralytic ileus revealed on plain abdominal radiograph, ascites, bilateral hydroureteronephrosis, and thickened bladder wall identified on ultrasound or CT. Bowel wall thickening, seen in 4 of the 5 patients reported by Min, *et al*, was also seen in our patient.

Although rare, it has been suggested that lupus cystitis may be underrecognized. In one study, interstitial cystitis was seen in 11 of 35 necropsies of patients with SLE and in none of the controls. The affected patients had not reported lower urinary tract symptoms[8].

While this is an unusual presentation of pediatric SLE, the association of lupus cystitis and extensive GI involvement at disease onset was previously reported in a 13-year-old girl[4]. In addition to nausea and vomiting, she also had abdominal pain with rebound abdominal tenderness. Unlike our patient, however, her symptoms were resistant to steroid treatment. She developed a perforation of the jejunum and later died. Other reports have also described the presentation of SLE with lupus cystitis at disease onset[9].

Multisystem disease and resistance to treatment with poor prognosis have been described in both adults and children. The literature review by Min, *et al* revealed 10 patients with lupus cystitis and associated GI disease that died. Causes of death have included complications from infection, intestinal perforation, hemorrhage, and CNS vasculitis[2]. As with our patient, a specific association with CNS disease has also been suggested. In the earliest case series of 6 patients with lupus cystitis, Orth, *et al* described 2 individuals whose illness was complicated by seizures and psychosis[3]. Additional reports of associated CNS disease have since appeared, although the significance remains unclear[2].

The etiology of lupus cystitis remains poorly defined. An immune complex mediated process was first suggested in 1970 by reports of circulating antibodies to bladder in 9 of 20 patients with interstitial cystitis. No such antibodies were found in any of the control patients[10]. Analysis of bladder biopsies from a 15-year-old with interstitial cystitis also directly implicated immune complexes in the disease pathogenesis[7]. Immunofluorescent deposits were also seen in the blood vessel walls of the small intestine and urinary bladder of a 33-year-old patient with this syndrome[11].

While many reports of lupus cystitis describe resistant disease with poor prognosis, our patient responded well to treatment with pulse steroids followed by daily prednisone. Other authors have also described improved success with a similar regimen when used early in the course of disease[12]. Recognition of lupus cystitis and its frequent association with GI manifestations, and possible link with CNS disease, will facilitate timely diagnosis and appropriate management.

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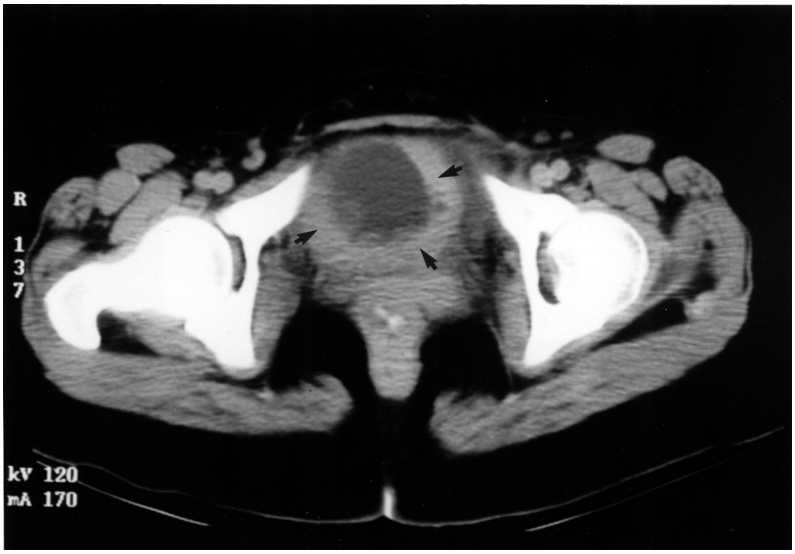

Figure 2. Infused CT scan of the pelvis, axial view: irregularly thickened bladder wall (arrows).

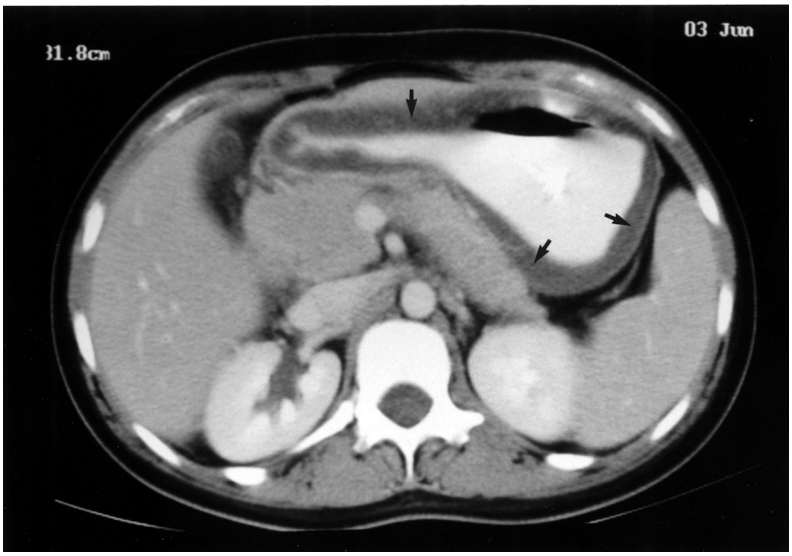

Figure 3. Infused CT scan of the abdomen, axial view: distended stomach with significant gastric wall thickening (arrows).

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