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Case Report

Cytomegalovirus ureteritis — an unreported cause of hematuria in an immunocompetent individual

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A middle-aged woman presented with painless hematuria and passage of large clots. Two weeks earlier, she had pyrexia with upper respiratory tract symptoms. Imaging studies revealed no lesions of the urinary tract. Cystoscopy showed clots and oozing of blood from the left ureteric orifice. Urine cytology and mucosal biopsies were normal. Left nephroureterectomy was done as an emergency procedure; the hematuria stopped following the procedure. Histopathology revealed cytomegalovirus inclusion bodies in the mucosa of the excised ureter. This unusual presentation of hematuria has not been reported previously.

Key words: Cytomegalovirus; Hematuria; Immunocompetence; Surgery

Introduction

Hematuria is an important clinical sign requiring complete investigation. We report a rare case of hematuria associated with cytomegalovirus (CMV) infection in an immunocompetent individual.

Case Report

A 45-year-old married woman with 3 children presented with total painless hematuria for 4 days, with passage of large amorphous clots. There were no associated urinary symptoms. There was no history of trauma, diabetes, tuberculosis, hypertension, or bleeding diathesis. Two weeks prior to hematuria, the patient had high-grade pyrexia with chills and upper respiratory tract symptoms, for which she took ciprofloxacin. There were no positive findings on clinical examination. Blood was tested for hepatitis B and C viruses and human immunodeficiency virus as part of routine evaluation and found to be negative for all. Abdominal ultrasound revealed moderate hydroureteronephrosis on the left side with numerous floating echogenicities suggestive of clots in the urinary bladder. Her hemoglobin was 10.5 g/dL, with normal renal function. Contrast-enhanced computed tomography scan of the abdomen did not show any significant anomalies to explain the hematuria. She underwent cystoscopy during which, in addition to clots in the bladder, an elongated clot was seen projecting from the left ureteric orifice along with continuous oozing of fresh blood. The clot was removed and ureteroscopy revealed erythematous inflamed mucosa in the lower 10 cm of the ureter with bleeding. Urine was collected for cytology from the left side and multiple mucosal biopsies were taken. Fulguration of the mucosa was attempted. The left ureter was stented in view of the dilatation. She was then managed with blood transfusions and other supportive treatment.

Urine cytology was negative for malignancy, and the mucosal biopsies were inconclusive. The patient continued to have episodes of severe hematuria and the hemoglobin fell to 8.4 g/dL. Angiography did not reveal any lesions and hence angioembolisation could not be done. As the patient continued to have gross hematuria with hemodynamic instability, left nephroureterectomy was done as an emergency procedure. The postoperative period was uneventful and hematuria stopped. Histopathology revealed CMV inclusion bodies in the mucosa of the excised ureter (Fig. 1 and Fig. 2). No abnormality was seen in the kidney. The patient is on regular follow-up and is completely asymptomatic at 6 months.

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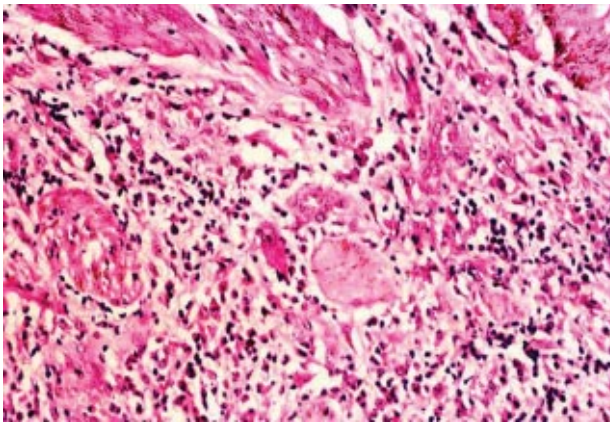

Fig. 1. Photomicrograph (× 20) showing cytomegalovirus inclusions in the ureteral mucosa.

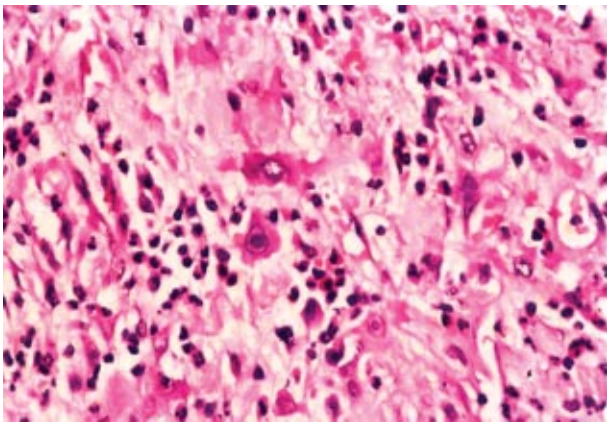

Fig. 2. Photomicrograph (× 40) depicting cytomegalovirus inclusion bodies.

Discussion

CMV infection is a major cause of morbidity and mortality in immunocompromised patients, such as organ or bone marrow transplant recipients, individuals with acquired immunodeficiency syndrome, neonates, and older patients. A prompt diagnosis is essential for efficient antiviral treatment in patients with severe or life-threatening CMV disease. Various methods and techniques have been deployed to improve CMV detection. Several tests are now available, including Light Cycler technology for quantitative analysis of CMV, flow cytometric assay for detecting CMV-specific antigen (pp65) in CMV-infected fibroblast cells and leukocytes [1], polymerase chain reaction for CMV DNA detection, in situ hybridization and immunohistochemistry with the monoclonal antibody (CCH2) showing labeled "owl's eye" cells [2], and rapid cell culture in which the culture is inoculated with patient leukocytes and monoclonal antibodies [3]. Routine methods, such as cell culture for virus isolation and immunoglobulin M serology are still being used. Nevertheless, none of these methods are entirely satisfactory in terms of sensitivity, specificity, and rapidity.

CMV infection of the ureter is emerging as a disease entity in renal transplant [4,5] and immunocompromised [6] patients; but to date there have been no reported cases of CMV ureteritis as a cause of hematuria in immunocompetent patients. Although we could not show a causal link between CMV ureteritis and hematuria, the possibility of this association should be borne in mind in diagnostic work-up.

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