

Case Report

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Hemorrhagic Cystitis Following Cephalexin Overdose in a Child

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Hemorrhagic Cystitis (HC) is an inflammatory process that leads to gross hematuria originating from the urinary bladder. A previously healthy 2.5-year-old male was referred to hospital five hours after ingestion of 120 ml (6 gr) of cephalexin suspension with abdominal pain, diarrhea, vomiting and gross hematuria. The results of physical examination were unremarkable except for mild suprapubic tenderness. He was admitted and hydrated.

Laboratory tests on admission showed normal CBC & electrolytes, PT&PTT and negative coombs test. Many RBCs per high-power field (HPF) in the urine and normal urinary tract sonography were detected. Within 24 hours, the urine cleared, showing only 1 to 2 red blood cells per high power field with no changes in the CBC, electrolytes, or kidney function tests. His urine culture was negative. Although there are reports of antibiotic-induced HC, the rarity of cephalosporins and cephalexin induced hemorrhagic cystitis encouraged us to report this observation.

Keywords: Cystitis; Hematuria; Cephalexin; Poisoning; Child.

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Running Title: Cephalexin-Induced Cystitis

Introduction

Hemorrhagic cystitis (HC) is an infectious or noninfectious inflammatory process that leads to gross hematuria originating from the urinary bladder mucosa. The etiology of HC might be viral, bacterial, parasitic, or fungal infections; drugs; radiation; chemicals (aniline or toluidine, insecticides); or rarely idiopathic. Two major drug groups as the cause of HC are anticancer drugs, mainly cyclophosphamide, and antimicrobial drugs. Hemorrhagic cystitis occurs in up to 70% of the patients exposed to high doses of cyclophosphamide or iphosphamide and in 15% of patients who undergo pelvic irradiation for the treatment of malignancy [1,2].

Other extremely rare reports include associations with food poisoning (*Salmonella typhi*), prolonged high-altitude air travel (Boon disease) [3,4] and collagen vascular diseases like SLE [5].

The clinical presentation of hemorrhagic cystitis includes hematuria, dysuria, and frequency.

Criteria for the diagnosis of hemorrhagic cystitis include a history of gross hematuria, laboratory findings of gross hematuria (>5 red blood cells/high-power field) platelet count >50,000/mm³ and a negative urine culture [6]. The bleeding can range from minimal (5 to 50 RBC per high powered field on microscopic examination of the urine), to massive, requiring transfusion to maintain hemoglobin levels [7].

Case Report

A previously healthy 2.5-year-old boy was referred to Loghman-Hakim Poison Center five hours after ingestion of 120 ml (6 g) of cephalexin suspension with abdominal pain, diarrhea, vomiting, and gross hematuria. On physical examination, the patient was in no distress. He was afebrile, his blood pressure was 90/50 mm Hg, his respiratory rate was 20/min, and his pulse rate was 100/min. The results of the general physical examination were unremarkable except

for mild suprapubic tenderness. He was admitted to the hospital and hydrated.

Laboratory tests on admission showed normal CBC & electrolytes, normal PT & PTT, negative coombs test, many RBCs per high-power field (HPF) in the urine, and normal urinary tract sonography. Within 24 hours, the urine cleared, showing only 1 to 2 red blood cells per high power field with no changes in CBC, electrolytes, or kidney function tests. His urine culture was negative. Because of rapid disappearance of symptoms, cystoscopy was not performed.

Discussion

Cases of HC are described with various drugs. Bright DA et al reported a 3-year-old boy with gross hematuria, weighing 15 kg, who took between 5-11 g of amoxicillin suspension without any allergic signs. This child's cystitis cleared rapidly when the drug therapy stopped and the child was hydrated. No sequelae were observed [8].

Catania MA et al reported HC in a healthy 33-year-old woman 2 months after consumption of a slimming product containing a mixture of herbal remedies. Symptoms spontaneously disappeared in a few days after she discontinued the herbal product [9].

Drug-induced hemorrhagic cystitis are seen both in therapeutic or toxic doses of drugs. Toma Y et al reported a case with gross hematuria, bilateral hydronephrosis when the patient received penicillin G for endocarditis, suggesting hemorrhagic cystitis complicated with urinary tract obstruction [10].

Guyhudson R. and Mark P. described a case of HC associated with risperidone [11].

Cases of HC are also described with ticarcillin, nafcillin, carbenicillin, piperacillin, kanamycin, isoniazid, indomethacin, naproxen, diclofenac, cyclophosphamide, ifosfamide, busulfan, vincristine, tiaprofenic acid, danazol and allopurinol [3,12,13].

Although there are reports of antibiotic-induced HC, the rarity of cephalosporins and cephalexin induced hemorrhagic cystitis encouraged us to report this child.

Conflict of Interest

None declared

Financial Support

None declared

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