

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Acute Hemorrhagic Cystitis in Children: A Case Series

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Abstract

Acute hemorrhagic cystitis is a diffuse inflammatory condition of urinary bladder with bleeding from bladder mucosa. The case records of children admitted with acute hemorrhagic cystitis (HC) diagnosed based on typical clinical features and or ultrasound features between May-June 2012 were included and their demographic data, clinical presentation, investigations and treatment were analysed. Six children were admitted with HC. The common symptoms were painful micturition, bloody urine and fever. The common findings on urine analysis were hematuria, pyuria and bacteriuria. Majority improved with symptomatic treatment. Two children received antibiotics for E.coli and Enterococcus sp in urine culture. HC in children is predominantly non bacterial and self limiting infection requiring symptomatic therapy. The presence of pyuria with bacteriuria should prompt one to rule out bacterial infection

Keywords: Acute; Hemorrhagic cystitis; children

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INTRODUCTION

Hemorrhagic cystitis is a diffuse inflammatory condition of the urinary bladder due to infectious or non infectious etiology resulting in bleeding from bladder mucosa. Drugs, environmental toxins, infections, radiation and systemic disease can cause hemorrhagic cystitis. It is commonly seen in those undergoing immunosuppressive therapy following transplants. Pediatric literature on hemorrhagic cystitis in healthy children is limited and hence the need for this study.

MATERIALS AND METHODS

This study was done to analyze the clinical profile of cases admitted for Hemorrhagic Cystitis (HC), following an outbreak in May – June 2012, in a medical college hospital. Children admitted with cystitis (based on typical clinical feature/USG finding) were included. Their demographic data, clinical presentation, investigations & treatment given were analyzed and reported.

RESULTS

A total of 6 children were admitted with history suggestive of cystitis in one month. All six children belonged to the same district. Males were 4 and females were 2. The mean age was 5.5 years with a range of 3 months to 10 years. The complete profile of cases is given in Table 1-3. The common presenting symptoms were painful micturition in all the 6 cases (100%), bloody urine in 4 cases (66.67%) and fever in 3 cases (50%). Three children (33.33%) had history of preceding upper respiratory symptoms prior to the onset of urinary symptoms. The common finding in urine analysis were hematuria in all 6 cases (100%), pyuria in 2 cases (33.33%), bacteriuria in only 1 case (16.67%). Urine culture was sterile in 4 cases and had grown *E. coli* and *Enterococcus* species in 1 case each. On abdominal sonography, changes suggestive of cystitis were found in 3 cases (50%) and reported to be normal in other three. Cystoscopy was done in one case with normal sonography and was found to have cystitic changes. Total count was elevated in 4 cases (66.67%), neutrophilia was seen in 2 children (33.33%). Co-morbid conditions like hypospadias, worm infestation, anaemia, PUJ obstruction and constipation were found in 1 child each. Two children received antibiotics for ten days (one child received injection ceftriaxone and one child received injection Amikacin). In one child antibiotics were given for three days and was stopped after three days as urine culture was sterile. Three children did not require antibiotics. Four out of 6 children improved within 72 hours of hospitalization and hydration therapy.

Table 1: Symptom profile of children admitted with HC

S.NO	AGE	SEX	PAINFUL MICTURITION	BURNING MICTURITION	BLOOD IN URINE	FEVER	ABDOMINAL PAIN
1	10 YRS	M	YES	YES	YES	NO	YES
2	3YRS	F	YES	YES	NO	YES	YES
3	7YRS	M	YES	YES	YES	NO	YES
4	10YRS	F	YES	YES	YES	YES	NO
5	3MONTHS	M	YES	NO	NO	YES	NO
6	2YRS	M	YES	NO	YES	NO	NO

Table 2: common symptoms in HC

PAINFUL MICTURITION	100%
BLOODY URINE	66.67%
BURNING MICTURITION	66.67%
FEVER	50%
ABDOMINAL PAIN	50%

Table 3: Laboratory profile of children with HC

SNO	AGE	SEX	TLC/DC	HB (gms/dl)	URINE ME	URINE C/S	RFT (mgs/dl)	USG ABD	CYSTO-SCOPY
1	10YR	M	7600/N52 L38	12.1	Plenty of RBCs	Sterile	-	Normal	Cystitis
2	3YRS	F	11500/N26 L 74	11.1	6-8 RBCs	Sterile	Urea 13/ creat 0.6	Thick bladder wall	No
3	7YRS	M	13300/N65 L 30 E3 M2	12	Plenty of RBCs	Sterile	Urea 13/ creat 0.6	Normal	No
4	10yrs	F	9400/N 76 L22 E2	9.1	4-5 RBCs, Bacteria 3+	E.coli	Urea 45/ Creat 0.8	HSM	No
5	3Mths	M	13300/N54 L45 E1	10.5	Plenty of pus cells, 4-5 RBCs	Enterococcus sp	Urea 16/ Creat 0.4	Thick Bladder wall LPUJO	No
6	2YRS	M	15100/N51 L39E4M2B2	10.5	Plenty of RBCs, 6-8 pus cells	Sterile	Urea 34/ Creat 0.6	Thick Bladder wall	No

DISCUSSION

In paediatric age group hemorrhagic cystitis occurs in immunocompetent children as compared to adults in whom it occurs following chemotherapy or immunosuppression[1]. Most of the patients were from same geographic area which shows an epidemic outbreak. Acute hemorrhagic cystitis is commonly caused by adenovirus. In one study, adenovirus type 11 was found to be the causative agent in children between seven to fifteen years of age [2], whereas in another study, adenovirus type 7 was commonly isolated in the urine of children with HC [3]. Other viruses like Polyoma viruses have also been implicated in causing hemorrhagic cystitis in

non-immunosuppressed otherwise healthy children [4,5]. In an American study published in late eighties, Escherichia coli was found to be more common or at least as common as adenovirus in causing acute hemorrhagic cystitis [6]. Most of our patients improved within 72 hours of hospitalization and half of them had preceding upper respiratory symptoms which is in favour of suggesting a viral etiology (illness days range being 7-12 days). Adenovirus cystitis commonly affects male children and the incidence of hematuria in adenoviral infection was found to be 9.8% with microscopic hematuria being more common than macroscopic hematuria [7]. In our series too male children were predominant and all children had microscopic hematuria and 66.67% had gross hematuria. Multiplex realtime PCR assay on urine can simultaneously detect polyoma virus and adenovirus in urine and can be useful if available [8]. Unfortunately we could not do virological testing due to lack of resources. Children with fever and pyuria were started on antibiotics following which infection improved. In majority of children no organisms could be identified and recovery was rapid. Adequate hydration remained the main stay of treatment in most of the cases which is similar to that reported in literature [9,10]. urinary analgesics were needed in two children. The symptoms associated with identifiable bacterial pathogen in urine were fever and pyuria. Routine use of antibiotics is not warranted for hemorrhagic cystitis in children as most cases are viral. Ribavirin, Cidofovir and Ganciclovir have been found to have beneficial effect in post transplant children with HC. In children with HC who have clinical suspicion of bacterial infection (Fever, pyuria and or bacteriuria), antibiotics will be required.

CONCLUSION

In otherwise healthy children who are immunocompetent, hydration therapy with urinary analgesics is all that would be needed to treat HC. In resource limited settings virological diagnosis is not possible and also not routinely required if clinical presentation strongly suggests a viral illness.

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