

Usefulness of Screening Febrile Infants for Urinary Tract Infection

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In developed countries urinary tract infection (UTI) in children is second only in frequency to upper respiratory tract infection as a cause of morbidity(1). In developing countries too, UTI is not uncommon. Among the pediatric population the maximum prevalence of UTI occurs in infants(2). In this period it can lead to septicemia and ultimately even prove fatal. Moreover, the long term consequences due to renal scarring at this age may be serious(3). However, because of non localization of symptoms to the genitourinary tract, a significant proportion of cases of UTI in infancy may be missed unless specifically looked for. In view of resource constraints, high risk screening is a feasible option.

Failure to thrive is the commonest manifestation of UTI in infancy. However, only a few parents seek medical advice

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seek medical advice primarily for this especially in the early stage. Fever on the other hand is the second most common manifestation of UTI that causes a lot of parental anxiety compelling parents to seek medical attention. It can be assumed that the chances of identifying cases of UTI in febrile infants are higher. The present study was conducted to verify this assumption and identify other possible risk factors.

Subjects and Methods

Two hundred and one febrile children (axillary temperature $>38.4^{\circ}\text{C}$) under 2 yrs of age constituted the study group. Of these, 100 children were without any obvious focus of infection (*Group I*) and the rest (*Group II*) had some other focus of infection such as pneumonia (n=50), diarrhea (n=34), tonsillitis (n=13), and meningitis (n=4). Six children with pneumonia, 2 with diarrhea and all 4 with meningitis had toxic look, features of shock, tachycardia and altered sensorium. Pathogenic organisms were grown from their blood culture. Hence these 12 children were diagnosed to have septicemia. Urine was collected by suprapubic aspiration in the study group. Ninety eight age and sex matched healthy children served as controls. Mid stream urine (MSU) specimen was collected in the control group because of ethical reasons. Urine culture was repeated if it grew contaminants. In the control children, if a pure growth was obtained then suprapubic aspiration was attempted to confirm the diagnosis. Patients receiving bactericidal/bacteriostatic drugs within 48 h prior to reporting to hospital were excluded. Urine collected was subjected to microscopic

examination for pus cells, bacteria as well as culture and antibiotic sensitivity testing. Other investigation such as blood culture, chest X-ray, lumbar puncture, *etc.* were conducted if required. Chi square test and Fisher's exact tests were used to test statistical significance.

Results

Out of the 201 febrile subjects studied, there were 5 cases of UTI (*Table I*) accounting for an overall prevalence of 2.48%. Three of these were males and 2 females. All the 3 male infants were below 10 mo of age and were uncircumcised. None of the cases of UTI in our series had symptoms pertaining to the urinary tract. All of them were irritable and 4 of the 5 had diarrhea.

There were 4 cases of UTI among the 34 infants with diarrhea. Three of them grew *E. coli* from both stool and urine samples. Out of the 12 cases of septicemia, 2 had UTI and they both grew *E. coli* from blood as well as urine culture. The association of UTI with diarrhea and septicemia was significant ($p=0.0065$ and 0.038 , respectively). Four out of the 5 cases of UTI had pyuria (more than 10 pus cells/cu mm in uncentrifuged urine) and bacteriuria (presence of more than 1 bacteria/oil immersion field in the Gram stain smear of centrifuged urine). None of the cases without UTI had pyuria or bacteriuria.

Discussion

Several studies in the developed countries have shown a low (1.7-4.1%) prevalence of UTI in febrile children(4-7). A higher prevalence rate of 10% has been reported from Nigeria(8). Dharnidharka and Kandoth from Bombay(9), studying 129 febrile infants have reported the over-all prevalence rate of UTI to be 5.4% which they consider high and have recommended routine urine screening of all febrile infants. The prevalence rate of 2.48% of UTI in infants in the present study is the lowest reported from a developing country and is similar to the prevalence reported from developed countries. Since this prevalence rate is not significantly different from controls we do not recommend routine urine culture of all febrile infants.

It has been suggested that febrile female infants with diarrhea are at a higher risk of developing UTI(9); the prevalence of UTI in this group was reported to be as high as 25%. The present study corroborates these findings. Besides it identifies septicemia as another significant risk factor for development of UTI in febrile infants.

We conclude that screening all febrile children for identification of UTI may not be cost effective. Limiting the screening to febrile infants with diarrhea or septicemia

TABLE I—Prevalence of UTI.

	Group I		Group II		Controls	
	No. studied	No. with UTI	No. studied	No. with UTI	No. studied	No. with UTI
Boys	56	0	61	3 (4.9)	58	0
Girls	44	1 (2.2)	40	1 (2.5)	40	0
Overall	100	1 (1.0)	101	9 (4.0)	98	0

Figures in parentheses indicate percentages.

may be cost effective as the pick up rate will be higher. Urine microscopy and Gram stain smear examination should be mandatory in these high risk children. Significant pyuria and bacteriuria in urine will guide to the presence of UTI and warrant a urine culture and further evaluation of genitourinary tract.

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