

associated with chills or rigors or if child is anemic, has poor weight gain or looks "ill", or is irritable or is vomiting or passes turbid or foul smelling urine. The concerned pediatrician should *scrutinize the child's history and physical findings carefully with a high index of suspicion and order urine culture whenever required.*

The references quoted in this editorial are from data published in 90's which clearly give a message that a pediatrician should not miss the diagnosis of UTI in a febrile child below 2 years of age because febrile UTI is likely to be associated with vesicoureteral reflux (VUR) or obstructive lesions; the incidence of VUR is 1:250. What answer will one give to the parents of a child in whom the diagnosis of UTI was missed in infancy because urine culture was not asked for during episodes of fever and subsequently he/she developed reflux nephropathy. A negative urine culture in a febrile child is reassuring to the parents and pediatricians alike.

As far as cost effectiveness is concerned, it is more expensive to treat cases who develop chronic hypertension or chronic renal failure, end stage renal disease or toxemia of pregnancy than cost of urine cultures in suitable cases with fever in childhood.

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Reply

We thank Dr. Yash Paul for the interest in our article. Dr. Mehta in her editorial had mentioned UTI to be the 'third most common cause of fever in children and in such a situation one may be justified in asking for a urine culture for every febrile subject. In fact, obtaining urine cultures for every febrile child would be ideal from

a Pediatric Nephrologist's point of view. However, we attempted to highlight the reality based on an investigation conducted in a typical developing country scenario. We differ from Dr. Mehta's opinion that UTI is the third common cause of fever in India. Other infections including respiratory tract infections, diarrhea, tuberculosis, typhoid, malaria, *etc.* are so rampant in our country that UTI accounts for only a small fraction of children with fever. Further, there is no reason to culture the urine when the cause of fever is obvious and does not relate to the urinary tract. Moreover ours being a developing country, we have severe resource constraints. Hence" one has to be choosy in selecting cases for urine culture to get the maximum benefit with minimum expenditure. It is in this context that we wished to share our own experience.

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Comments

Dr. Yash Paul has asked an important question. Should urine culture be obtained in every infant who has fever without an obvious cause? Dr. Mehta in her editorial has given the standard recommendation. I agree that urine must be examined in such cases to detect UTI.

It is however, very likely that in our country occasional instances of unexplained fever in infants are usually not due to UTI. The most frequent causes of fever are upper respiratory infections, otitis media (incidentally, pediatricians do not routinely examine the ears in their patients), diarrhea and nonspecific viral infections. In 201 patients with fever, Srivaths *et al.* detected UTI in five cases, four of whom had diarrhea.

A study carried out at our center (unpublished, but results presented at VI Asian Congress of Pediatrics at Tokyo in 1988) also indicates that a majority of unexplained febrile episodes are not due to UTI.

We screened 200 infants below the age of 3 years with unexplained fever. Urine specimens were collected by suprapubic bladder aspiration and examined microscopically and cultured. Fifty four per cent patients were below the age of 1 year, and 61% were boys. Significant bacteriuria was found in 8 cases. Detailed enquiry disclosed that 6 of these had 2-4 previous unexplained febrile episodes. More importantly, imaging studies revealed Grade II vesicoureteric reflux (VUR) in 2 cases and pelviureteric junction obstruction and posterior urethral valve in one case each.

Detection of UTI is important as it may be a complication of an underlying anomaly of the kidney and urinary tract or VUR. In the absence of these an attack of lower UTI may not be serious. The maximum damage by UTI in association with high grade VUR occurs in the first 2 years of life; even a first attack of UTI may lead to renal scarring. Similarly, UTI may cause serious complications in the presence of obstructive uropathy.

In view of these facts there can be no doubt that UTI should be looked for in every infant with unexplained fever. The main problem in carrying out such a recommendation is not that of cost-effectiveness, but of the practical difficulty in obtaining a satisfactory midstream specimen of urine in infants, which takes

time and patience. The procedure of suprapubic bladder aspiration is simple and safe, but usually not employed in outpatient or clinic practice. Urine culture and sensitivity test is one of the simplest microbiological procedures, and a majority of laboratories do not charge excessively for this important service. Also, if microscopic examinations of a fresh drop of urine do not show bacteria and neutrophils, UTI may be reasonably excluded and the culture test may not be necessary.

VUR and obstructive lesions of the urinary tract need to be diagnosed as early as possible, and the cost of missing these abnormalities must be balanced against what really amounts to inconvenience on the part of the physician.

Dr. Mehta and Srivaths *et al.* do not belong to "two different schools of thought"! The suggestion of the latter authors (that urine culture should *only* be obtained in infants with septicemia and diarrhea) based on a small study, would find little support from pediatric nephrologists.

Despite the difficulty in obtaining a specimen of urine and the "low yield", urine examination must be carried out in infants and young children with unexplained fever, particularly if it is recurrent.

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