Discussion

Multi-drug resistant *Salmonella typhi* is causing serious concern country-wide. In the present study, a combination of cephloridine and gentamicin showed poor response (43.48%) despite *in vitro* sensitivity, in contrast to 100% response observed by Koul *et al*.(2). *In vivo* resistance to cephalexin and gentamicin despite *in vitro* sensitivity is known(6). On the other hand, ciprofloxacin was successfully used as first line during in MDRST cases. Similar observations have been reported by various authors(7-9). On follow up to 8 months, this drug did not show any side effects. Although long term follow up is needed, this study shows that ciprofloxacin is a safe and effective form of therapy in MDRST infection.

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Diazo Test in Typhoid Fever

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Typhoid fever is a major health problem in India. It continues to exist as an endemic disease due to poor sanitation and low economic status. The emergence of multi-drug resistant *Salmonella typhi* (MDRST) infection has posed many problems relating to diagnosis and therapy. Due to delay

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involved in getting culture reports, patients have to wait to get definitive therapy. The different diagnostic tests to establish the diagnosis have their own limitations. Diazo test, a simple bed side urine test may be of great value in early diagnosis of typhoid fever. This study analyses the value of diazo test *vis-a-vis* blood culture.

Material and Methods

Diazo test was carried out on children admitted to the pediatric ward of Command Hospital. The criteria for patient selection was the clinical suspicion of typhoid fever. All cases included in the study underwent clinical examination, investigations including complete blood counts, blood culture and antibiotic sensitivity tests, Widal test, and other appropriate tests where indicated. Most of the children had received antibiotics prior to admission. Diazo test was done on early morning samples of all cases daily from their time of inclusion in the study to the time of discharge.

Diazo Test: Diazo reagent is prepared from two stock solutions 'A' and 'B', the constituents of which arenas follows: (i) Stock solution 'A': Sulphanilic acid - 0.5 g, Cone HC1 - 5 ml, Distilled water - 100 ml; and *(ii)* Stock solution 'B': Sodium nitrite - 0.5 g, Distilled water - 100 ml.

Forty parts of stock solution 'A' is mixed with 1 part of stock solution 'B'. Equal quantity of this mixture and early morning urine sample are mixed. To this 5 drops of 30% ammonium hydroxide is added. The sample is shaken well. A positive reaction is indicated by a red or pinkish coloration of the froth(l). In this study blood culture was taken as 'gold standard' and the results of diazo test were compared to it. Statistical analysis of the results were carried out to determine: (i) per cent of false positive, *(ii)* per cent of false negative, *(iii)* sensitivity, (iv) specificity, (v) positive predictive values, *(vi)* negative predictive values, (*VII*) likelihood ratio of positive test, and *(viii)* likelihood ratio of negative test(2).

Results

Thirty cases were included in the study. Thirty per cent of the patients had fever for less than 7 days, and the other 70% had fever of more than 7 days when included in the study. A majority of these cases had received one or more antibiotics prior to admission. Of the 30 blood cultures, 12 were positive for *Salmonella typhi* (40%). None of the cases had a positive Widal test. A total of 149 diazo tests were done on these 30 cases during their period of hospitalization. The average number of diazo test in culture positive cases were 7.1. In the 12 culture positive cases, 68 diazo tests were done while the patients were on antibiotics, and 18 while not on antibiotics. In the 12 culture positive cases, there were 11 positive diazo tests and one negative. It was also observed that cases with positive diazo test remained so throughout the period of illness and became negative only with clinical response. Another interesting finding was that administration of antibiotics did not interfere with the diazo test. *Table I* details the results of diazo test and the statistical analysis.

Discussion

In the recent past most centres in India have experienced a sudden spurt in the incidence of typhoid fever. A significant percentage of these cases have been due to MDRST infection. The varied clinical picture due to variable agent virulence and host immunity makes the diagnosis of typhoid fever less than easy. Blood culture provides unequivocal evidence of infection. However, it is not always feasible in clinical practice,

TABLE I—*Diazo Test vis-a-vis Blood Culture in Typhoid Fever*

Diazo test	Blood culture		Total
	(Positive) (n = 12)	Negative (n = 18)	(n = 30)
Positive	11	3	14
Negative	1	15	16
False positive (%)	17		
False negative (%)	9		
Sensitivity (%)	92		
Specificity (%)	83		
Positive predictive value (%)	79		
Negative predictive value (%)	92		
Likelihood ratio of positive test	5.48		
Likelihood ratio of negative test	0.10		

to submit blood for culture in the first week of illness and before antibiotics have been administered. Widal test, a complimentary test provides inadequate information for confirmation of typhoid fever.

Originally described by Huckstep in 1962, diazo test has been .recommended as a diagnostic aid in typhoid power (1,3). The principle of this test is that putrefaction of a protein in the intestine, whose breakdown product is excreted in the urine as a phenol ring compound, is detected, by a positive reaction. False positive reactions are seen in about 5% and false may be found in pulmonary tuberculosis, measles and typhus(3). Scanning the literature has not given any further reference on the test. Our results *(i.e.,* sensitivity 92% and specificity 83.3%) confirms the utility of the test.

Though, the various methods applied to test the diazo test are derived from the same figures, each test, however, highlights a different parameter. A positive predictive value of 79% suggests that in about 79% of occasions a positive test signifies presence of typhoid fever. Similar is the value of the negative predictive value.

Another index of the utility of the diazo test is the likelihood ratio. It expresses the odds that a positive or negative test would be expected in a patient with (as opposed to one without) the target disorder. The likelihood ratio of positive test for diazo test in this study was 5.48. It means that a positive test is 5.48 times as likely to come from a patient with typhoid fever as from one without the disease(2).

This study amply justifies that diazo test is a useful diagnostic test in the early diagnosis of typhoid fever. More

importantly, prior administration of antibiotics does not interfere with the test. This simple and quick test has a high degree of sensitivity and specificity and good likelihood ratios.

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HIV Related Immune Thrombocytopenia

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Till October 1990, Human Immunodeficiency Virus (HIV) has been reported in 4,082 individuals out of 5,80,824 tested in India(l). To-date over 700 patients with HIV-related thrombocytopenia have been reported in the world literature(2).

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The need to create an awareness of tilling out HIV infection in patients presenting with thrombocytopenia has prompted us to document this case and discuss the therapeutic options.

Case Report

A 6-year-old boy presented with a history of easy bruisability for 2 months which had increased over a period of 8 days. He had 2 episodes of epistaxis. He had received a blood transfusion at a private hospital 3 years ago for anemia. Eight months prior to this presentation, the child had received rifampicin and isoniazid for 6 months for primary complex. On examination, the child had ecchymotic patches over both the lower extremities and on the left cheek. Systemic examination was normal. Investigations showed hemoglobin 10.8 g/dl, total leucocyte count 6,800 per cu mm with 45% polymorphs and 55% lymphocytes. The platelet count was 52,000 per cu mm with a normocellular bone marrow (M : E : : 3 : 1). The megakaryocytes though structurally normal' were increased in number. The antiplatelet antibody titre was 1:32 by the immunofluoescence techniques. Micro - ELISA (Wellcozyme HIV recombinant UK 56/57) for