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Widal Reaction in Kala-Azar

U.K. Singh
R.K. Sinha
V.K. Sharma

Enteric fever(l) and Kala-azar (visceral leishmaniasis) are endemic, in and around Patna. Kala-azar usually has an indolent course but it can present as an acute disease with fever, anorexia and vomiting(2,3). At times both the diseases are so closely similar in their presentation, that differential diagnosis is not always clear, Widal test, inspite of its limitations and fallacies is still widely used as a proof of enteric fever. We found that some of the widal positive patients did not respond to the conventional treatment for enteric fever. Later on they were proved to be cases of Kala-azar (by demonstration of *Leishmania donovani* bodies, in bone marrow or splenic aspiration) and responded to anti kala-azar treatment. This prompted us to take up a study to determine the behavior of Widal reaction in proven cases of Kala-azar.

From the Upgraded Department of Pediatrics, Patna Medical College, Patna.

Reprint requests: Dr. Utpal Kant Singh, Rajendra Nagar, Road No. 8, Patna 800 016.

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Material and Methods

The study included 60 proven cases of Kala-azar who presented to us between January 1992 to June 1993 and 30 children serving as a control group. The study group had 42 males and 18 females in the age group of 4-12 years and the control group had 20 males and 20 females of comparable age and socioeconomic conditions. The criteria for selection in the study were: fever of more than 10 days duration, no therapy before coming to us, no history of preceding fever or TAB (Typhoid, Paratyphoid A and B) vaccination in last 6 months, negative peripheral blood smear for malarial parasites and presence of *Leishmania donovani* bodies (LD bodies) in bone marrow or splenic aspirate. The control group comprised of healthy children without history of fever or TAB vaccination in the last 6 months and were widal negative. The study protocol included thorough history and clinical examination; complete blood counts; thick and thin peripheral blood smear for malarial parasites on admission and during spikes of fever; bone marrow or splenic aspirates for demonstration of LD bodies; widal test which included both O and H antigens of *Salmonella typhi* and *Salmonella paratyphi* A and B, on admission, in positive cases at the time of discharge and 4 weeks and 6 months after discharge; blood and stool culture for *Salmonella* species in patients with positive widal reaction; urine examination and culture; X-ray chest PA view; and Mantoux test, when indicated.

Results

A positive Widal test for both O and H antigens of *Salmonella typhi* (titres above 1:160) was observed in 11 (18.3%) children in the study group *(Table I)* but none in the control group (titre 1:20 to 1:80). Widal test for *Salmonella paratyphi* A and B was negative in all. The blood and stool cultures were also negative in all.

All the 60 cases were treated with sodium stibogluconate (20 mg per kg body weight per day). Only 11 widal positive cases of the study group were followed up and of these, 7 completely recovered with disappearance of signs and symptoms and were parasite negative in 4 weeks. Four cases which did not respond to sodium stibogluconate were again investigated and LD bodies were present in bone marrow and splenic aspirate but the widal reaction titre was same. They were treated with pentamidine isothionate (3 mg per kg body weight per day) and showed complete recovery in 10 days. Thus all the patients responded and completely recovered with anti Kala-azar treatment. The clinical profile and course were similar in both widal positive and negative cases. Although LD bodies were absent, the titres of widal reaction at the time of discharge and 4 weeks after treatment remained the same with no fever. They were again seen at 6 months and were still asymptomatic and widal negative.

Discussion

Both Kala-azar and enteric fever are endemic in our zone. In such areas where blood culture facilities are not adequate, the widal test is still widely used for diagnosing enteric fever. Serologic diagnosis of typhoid fever has commonly been made by either a four fold rise in antigen titres, especially O antigen titres

TABLE I—*Data of Widal Positive Cases*

Age (yr)	Sex	No.	Past history of fever of TAB vaccination within 6 months	Total WBC/10^3	LD bodies in bone marrow or splenic aspirate		Widal reactions				Cultures		
							On admission		4 weeks after discharge				
					On admission	After treatment	Dilutions	No. of cases	Dilutions	No. of cases	Blood	Stool	Urine
4-12	M	8	Absent	4.4-8.6	Present	Absent	1/160	3	Same	Same	Negative	Negative	Negative
	F	3					1/240	6	Same	Same			
							1/320	2	Same	Same			

or a rising titre on repeat Widal test(4). In endemic areas, titres of 1:100 for O agglutinins and 1:200 for H agglutinins are usually considered significant for diagnosis of typhoid fever(5,6).

Of the 60 cases of Kala-azar, 11 cases showed positive widal reaction. The widal test in all these cases were false positive because: blood and stool cultures were negative for *Salmonella* species, the O and H agglutinins did not show a rising titre on repeat widal test, LD bodies were demonstrated in aspirates of bone marrow or spleen, and all the 11 cases who were Widal positive responded to anti Kala-azar therapy. It can, therefore, be concluded that in our cases enteric fever and Kala-azar were not present simultaneously. False positive widal test is reported in malaria(7,8), some chronic liver disease(9) where serum globulin levels are high, in certain immunological disorders(10), and in patients previously exposed to other *Salmonella* infections(5). The most likely reason for the false positive widal reaction in our study may be high globulin levels observed in Kala-azar as the liver is involved. Other possible reasons such as infections by non typhoidal *Salmonella* infections and subclinical *Salmonella* is unlikely as none showed growth of *Salmonella* in stool cultures nor had rising titres of Widal reaction.

Our studies suggest that in endemic areas, where the patient presents with pyrexia and positive Widal reactions, who are not responding to standard enteric fever treatment, Kala-azar should be considered as an underlying etiology for a positive widal reaction.

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