

PREVALENCE OF *SALMONELLA TYPHI* AND *PARA TYPHI* FROM CLINICAL SAMPLES HYDERABAD - KARNATAKA REGION

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ABSTRACT

Experimental Study was undertaken for isolation of *Salmonella typhi* & Para typhi from patient blood and blood clot cultures are used. The isolation rate is less and 5ml of whole blood required a minimum of 50ml of bile broth to dilute the bactericidal effect of the serum. However the isolation rate for recovery in 900 cases of enteric fever was only 35% to 40% when 50ml medium was used as compare to 70% recovery from blood clot from the same group incubated in streptokinase bile salt broth. Further investigation clot culture is rapid and dissolution with streptokinase is preferable to whole blood culture.

A 50ml volume of bile broth with 100U of streptokinase is adequate for the clot from 5ml of blood and saving on media and considerable cost benefits in developing countries.

In the present study we investigate the age and sex group of patients, and more sufferers from this disease preferable childrens, Youngers and females are more prone to this disease.

Keywords: Clot Culture, Streptokinase, Bile broth, Enteric fever, *Salmonella typhi*.

INTRODUCTION:

Enteric fever is a major public health problem in the developing world. It affects 6 million people worldwide with more than 600000 deaths a year. Almost 80% of the cases and deaths are in Asia & the rest occur mostly in Africa and Latin America [1].

Enteric fever is endemic in many developing countries, including India and if not treated appropriately, has a mortality rate of 30%. Appropriate treatment reduces the mortality rate to as low as 0.5%-1%.

Isolation of *Salmonella typhi* from blood is the diagnostic method of choice in typhoid fever, However the reported incidence of the isolates varies enormously. In a series in

Delhi, India, only 527 isolates were obtained from 5,735 suspected cases (9.2%)[5]. This compares with 175 isolates in 243 cases (72%) in Rhodesia[8] and 219 isolates from 298 clinical cases in a pediatric group in Natal(73%)[4].after removal of the serum and dissolution of the clot with streptokinase[6].

In India, it is mainly caused by *S.typhi* and is endemic in all states with periodic outbreaks of multidrug resistance typhoid occurring in epidemic proportions thus posing a public health problem and anxiety to the medical community. Enteric fever occurs in all age groups, but is most

common in children. Since 1972[1], outbreaks of enteric fever by resistant plasmid carrying multidrug resistant strains of *S.typhi* have reported from South[2,3] north[4],east[5],west[6] and central[7]India.

MATERIALS AND METHODS:

Collected different samples from hospitals and clinical laboratories of Gulbarga and Raichur districts weekly twice from each lab. The collected samples are further studied for isolation.

Collected samples are further we cultured in the suitable Brain heart infusion broth culture media for the growth and blood culture bottles were incubated at 37°C over night .the turbidity was observed everyday. If there is growth subculture was done on next day on Blood agar and Mac Conkey’s agar. After obtaining good growth, it was plated on selective medium, Wilson and Blair Bismuth Sulphite agar. Identification of the colonies was made by standard colonial morphology. Further we regularly collecting Blood samples and inoculated into the initial bile broth and keep it incubation 18 hrs at 35°C after incubation then put on Mac Conkey’s agar media for overnight incubation non- lactose fermenting colonies will appear. Further these colonies are selected for Biochemical test, IMVIC; Triple Sugar Iron Agar media are tested as follows for standard identification procedures (Cruickshank).The triple sugar iron slants with a butt were prepared and the test isolates were stabbed in the butt and streaked over the slants. The tubes were incubated at 37°C for 24 hours. The crescent shape blackening of the medium indicates the formation of H₂S, which was recorded as positive and further we carried out Citrate utilization, Oxidase test has done.

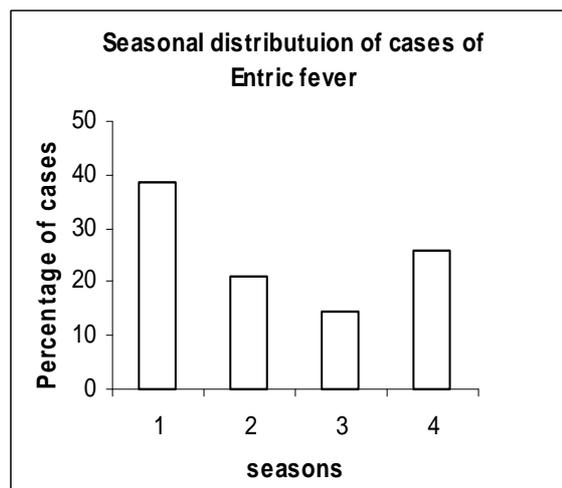
Serotyping of confirmed isolates of *Salmonella typhi* were carried out by slide agglutination test. This procedure prescribed

by Cruickshank. 1975, was followed for all the isolates of *Salmonella typhi* against polyvalent-O, polyvalent-H, d-H(S, typhi H) and Vi-antisera.

RESULTS:

Total period of two year, initially screened with different diagnostic lab samples like faeces, urine, CSF and Blood samples collected and highest salmonella strains isolated from blood samples. From faeces, urine, and CSF. Isolation rate is very less so, finally we selected blood sample and regularly we collected blood samples from different diagnostic laboratories patients of Gulbarga and Raichur districts.

It was observed that a large number salmonella cases in the summer months like April, May and June than monsoon season. The number cases decreases during winter. During summer and monsoon months the water supply and sanitation systems are not in proper utilization and maintains in these districts, because very high (extreme) temperature compare to all other parts of the Karnataka state, which could account for the higher incidence in these months (Fig.1).April-June, July-Sept, Oct-Dec, Jan-Mar.



(Figure 1): 1-April-june, 2-july-sept, 3-Oct-Dec, 4-Jan-Mar.

Figure 2

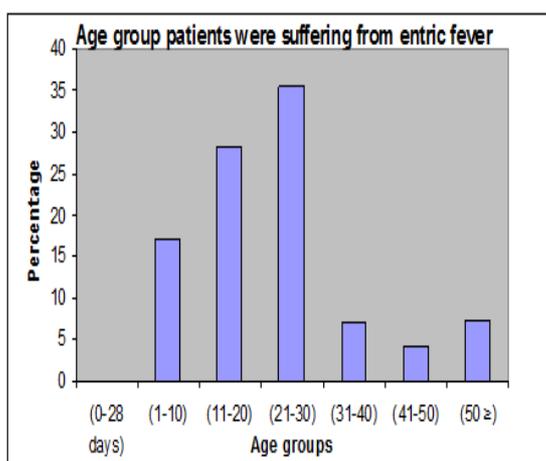


Table 1. Age and sex distribution of patients suffering from Enteric fever

Age	Male	Female	Total (%)	Percentage (%)
Neonates(0-28 days)	0	1	1	0.1
Pediatrics(1-10)	91	62	153	17
Teenage(11-20)	100	153	253	28.1
Adults(21-30)	146	174	320	35.5
Middle age(31-40)	39	25	64	7.1
Late middle(41-50)	18	21	39	4.3
Old age(50 onwards)	29	36	65	7.2

A total of one year study 905 patients enter in this study, of which 423 of male and 472 female in all had bacteraemia due to *Salmonella* spp.. the majority of isolates,153 (17%)were found pediatrics, 253(28.1%) are from children and 320(35.5%) isolated from adults Shown (Table 1).the case were predominately in the 1-10 year of the age group, 11-20 year teenage group and 21-30 year of the age group adults were more suffer

than middle age, late middle age and old age people. This is one of the very important reports in this region.

DISCUSSION:

Enteric fever is a major public health problem in our country. Proper sanitation, public health education & vaccination are long term preventive measures that would improve this satiation.

The comparative results that 50ml of medium with 5ml of blood is inadequate for whole blood cultures. Our further investigations have shown that somewhere in excess of 100ml and preferable nearer to 200ml of medium is needed for 5ml of blood if comparable isolation rates are to be obtained for blood clot and whole blood cultures. In a series of studies 100, 150, and 200ml of medium for 5ml of blood for whole blood cultures, the isolation rates compared to those from blood clot were 80, 90&100 respectively. Isolaton from blood colt is for more reliable, provided rapid lysis occurs, since organisms trapped within the clot are susceptible to serum factors adsorbed to the fibrin meshwork (K.C.watson M.B thesis). We have utilized the method of lysis with streptokinase in bile salt broth in a series of almost 1200 cases of enteric fever over a period of 2 years and have impressed by the high isolation rate. Totally 1200 patients entered the study of which male and females all of them had bacteremia due to the *Salmonella* Spp.. The majority of the 17% pediatrics, 29% childrens, 36% adults of these three groups are more sufferer than other groups.

In this study adults are more suffering from this disease because they are more exposed in the outside food habits and water. This report is very important in this region. One more observation in this present study, different seasons we collected samples and

this disease is more occurs especially as per our studies in the month of April-June, these months are very hot and dry seasons and July-Sept monsoon are more people are suffering from this infection. It was observed that large number of typhoid cases decreases during winter than summer and monsoon months the water is contaminated due to pollutants and proper sanitation systems are not properly utilization and maintenance.

In these districts temperature is very high (extreme) so, it is also one important factor to higher incidence in these months.

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