A COMPARATIVE STUDY OF WIDAL TEST AND IMMUNOCHROMATOGRAPHIC ASSAY FOR RAPID DIAGNOSIS OF TYPHOID FEVER AND MOLECULAR ANALYSIS OF PLASMID MEDIATED QUINOLONE RESISTANCE IN CLINICAL ISOLATES IN A TERTIARY CARE CENTRE

Salmonella enterica subspecies enterica serovar Typhi , the human specific , causative agent of typhoid fever , is one of the most common infectious disease in developing countries like India. Widal test is assosciated with numerous limitations ,but is still considered and extensively used as the diagnostic tool in our area. The bacteriological identification by blood culture is the best confirmative test of typhoid fever.The present study was carried out in Tirunelveli Medical College and Hospital , Tirunelveli for a period of one year from June 2017 to July 2018. A total number of 100 clinically suspected typhoid fever patients' blood samples was taken and blood culture,widal test and Immunochromatographic tests done.We have assessed the reliability of ICT for the early diagnosis of typhoid fever when compared to the widal test.The antibiotic sensitivity and resistance pattern of the isolates were detected by disc diffusion method and subsequently the PMQR pattern of these isolates were detected by PCR.

A total of 14 *Salmonella* Typhi were isolated from 100 clinically suspected typhoid cases.A total of 47 samples were tested positive in widal test. Out of this only one sample was positive for blood culture (True positivity rate – 2.1% and True negativity rate – 75.4%). Out of 26 samples positive for IgM, 10 samples were positive for blood culture (True positivity rate – 38.5%). Out of 74 samples that was negative for IgM, only 4 samples were found to be positive for blood culture (True negativity rate – 94.6%).. Most isolates were sensitive to azithromycin(85.7%), ciprofloxacin(57.1%) and pefloxacin(50%). 42.9% sensitivity to Ceftriaxone and Nalidixic acid ,74.3% were resistant to Chloramphenicol and Cotrimoxazole and 85.7% were Ampicillin resistant.

Molecular characterisation done, to determine whether fluoroquinolone resistance was plasmid mediated . The two resistant isolates of S.Typhi were found to be positive for plasmid mediated quinolone resistance gene qnr A. No mutations were detected in qnrB gene.

In conclsion ,the study implies that rapid ICT tests offers increased sensitivity, rapidity and simplicity over blood culture and Widal test , and can be used as a reliable, alternate early diagnostic tool to the most commonly used serological tests.

The antibiotic sensitivity pattern in this area shows a shift towards decrease in the previous presumptions of absolute fluroquinolones resistance pattern.this hence encourages us tointurn implement the rational use of fluroquinolones again, in the treatment protocol for typhoid fever.

Keywords :

ICT - Immuno-chromatographic test, PMQR-Plasmid mediated quinolone resistance, PCR-Polymerase chain reaction, qnr- quinolone resistance gene