

EDITORIAL

FALSE POSITIVE-FALSE NEGATIVES IN DIAGNOSTIC TESTS

A recent meeting of physicians was informed that the Widal test for typhoid is unreliable. There was nothing new in this pronouncement expect, that the news was picked up by print and electronic media and was the subject of editorial commentaries in several newspapers. The validity of Widal test has been questioned before. In the scientific literature, it is recommended that results should be interpreted cautiously.

The significance of bacterial agglutination (clumping of bacteria by specific antibodies) as a diagnostic tool was discovered by *Gruber* and *Durham* in 1896. Soon after that Widal popularized, its use in the diagnosis of typhoid fever caused by *Salmonella typhi*. Widal test as used today, was designed by *Felix* and *Bensted* in 1954. The genera *Salmonella* is named after American veterinarian, *Daniel Salmon* noted for his work on hog cholera. There are over 300 serotypes in the *Salmonella* group arranged in a series often referred to as the Kauffmanns - White schema. They are differentiated by *O* (somatic), *H*(flagella) and *Vi* antigens.

Widal test is capable of detecting active typhoid infection but often gives false negatives and false positives. It is rarely possible to obtain conclusive serological evidence of typhoid infection before 3 weeks. In a few cases the patient fail to develop demonstrable levels of H-antibodies. There is also the possibility of serological cross-reactivity resulting in false positives. For example living in people, typhoid endemic areas, the possibility of false positive is very real since they will have come into contact with *S. typhi* and developed antibodies. It is recommended that the test should be repeated after a few days to demonstrate rising titres of the antibodies for *S. typhi*.

If the clinical symptoms and case history are suggestive of typhoid, immediate treatment should be instituted even if the widal test is inconclusive currently the fluoroquinolones (Norfloxacin, Ciprofloxacin, Pefloxacin) are the drugs of choice but Chloraphenical is also effective. In some cases, the clinical symptoms of typhoid closely resemble those for malaria and some clinicians advocate concurrent treatment of both typhoid and malaria pending definitive confirmation.

The controversy regarding the validity of Widal test partially highlights a common problem in diagnostic tests, particularly those based on antigen-antibody reactions. A false negative or a false positive can have far-reaching, irreversible and devastating consequences. Thus a false positive Elisa or VDRL test may prompt the patient to commit suicide or wreck a harmonious marriage. The significance of these false results is rarely appreciated, especially by private diagnostic laboratories that rarely repeat the test or counter check the results using control samples. There is yet another factor to be borne in mind. Many of the tests done in private laboratories are often done by junior technicians or nurses without proper supervision. Many of these laboratories have no reputation to defend and some are even known to write reports without doing the test, especially where the clinical symptoms strongly suggest the presence of the infection.

In litigation conscious societies the consequences for false results could lead to bankruptcy arising from punitive court awards. The problem of false negatives - false positives should be the concern of all health professionals. It is a moral issue, court action notwithstanding.

Editor-in Chief