
TESTING FOR TOXIC SHOCK SYNDROME

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Toxic shock syndrome (TSS), characterised by fever, desquamative skin rash, hypotension and multisystem involvement, occurs in patients who harbour *Staphylococcus aureus* strains that elaborate either toxic shock syndrome toxin 1 (TSST-1) or other related enterotoxins (SEs).

About half of all isolated strains of *S. aureus* produce enterotoxins, of which there are presently five (A-E) serologically distinct types (enterotoxin F is identical to TSST-1). They all exert their action by stimulating a subset of T lymphocytes and are therefore called bacterial superantigens. Superantigens are defined as molecules that bind with high affinity to T cell receptors at sites distinct from the classic antigen binding groove. This interaction causes prolific activation - or under certain circumstances inhibition - of T cell functions, including liberation of IL-1, tumour necrosis factor (TNF) and interferon- γ , with consequent activation of macrophages.

TSST-1 has been identified as being highly associated with TSS; approximately 75% of patients' isolates are positive for TSST-1, whereas 25% are positive for other staphylococcal toxins, including enterotoxin B (23%) and enterotoxin C (2%). It is thought that many factors prevailing in the vagina in the presence of hyperabsorbable tampons will favour the production of TSST-1.

The prevalence of antibodies against TSST-1 is above 90% in the normal population. Practically all patients with menstrual-associated TSS had undetectable antibodies against TSST-1 at the onset of the disease and usually fail to develop these antibodies on a convalescent specimen of serum.

Staphylococcal toxin and antitoxin testing is available through

Toxin Technology, Inc.
7165 Curtiss Avenue
Sarasota, Florida, 34231
United States of America

Telephone 0011 1941 925 2032
Facsimile 0011 1941 925 2130.

Staphylococcus aureus isolates are tested for the ability to produce TSST-I, staphylococcal enterotoxins A-E, or exfoliative toxin. Serology testing is undertaken for antibodies to TSST or other requested toxin(s). The cost is US\$50.00 and the turnaround time is approximately one week.

Invasive Group A streptococci can be referred for M, T and OF typing to

Dr Diana Martin
New Zealand Communicable Diseases Centre
PO Box 50348
Kenepuri Drive
Porirua
Wellington New Zealand

Telephone 0011 64 4 237 0149
Facsimile 0011 64 4 237 2370.

The charge is \$NZ 50.00 (\$A 42.50) per organism.

It is important to note that none of the tests confirm, but only support, the diagnosis. In addition to the two reference laboratories quoted above, there may be other laboratories that can perform the testing. Knowledge of their whereabouts would be a useful resource.