

**EVALUATION OF RAPID DIAGNOSTIC
TESTS FOR BACTERIAL AND FUNGAL
INFECTIONS IN FEVER OF UNKNOWN
ORIGIN IN IMMUNOCOMPROMISED HOST**

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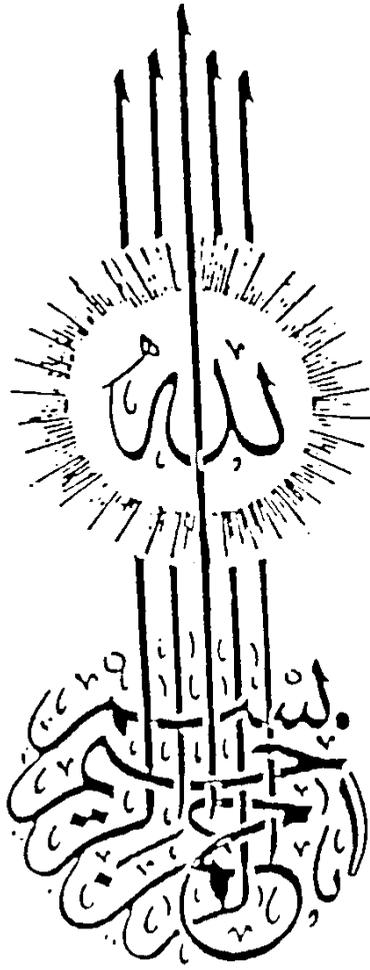
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C O N T E N T S

	Page
* INTRODUCTION AND AIM OF WORK	1
* REVIEW OF LITERATURE	4
- Definition Of Immunocompromised Host	4
- Causes Of Immunosuppression	4
* Primary immunosuppression	4
* Secondary immunosuppression	5
- Cytotoxic Drugs Or Hormone Induced Immuno- suppression	7
- Corticosteroids	11
- Radiotherapy	17
- The Effect Of Antibiotics On Host Defence Mechanism	19
- Malignant Diseases, Immunosuppression And Infection	25
* Acute leukemia	25
* Chronic leukemia	25
* Hodgkin's disease	26
* Multiple myeloma	29
- Infection In Immunocompromised Host	30
* Bacterial infections in immunocompromised host	31
* Fungal infections in immunocompromised host	43
Candidemia	43
Aspergillosis	48
Cryptococcosis	55
Other fungal infections in cancer patients	57
* Viral infections in immunocompromised host	59
- Parasitic Infestation In Compromised Host	63

	Page
- Mixed Infection In Compromised Host	67
- Antigenemia And Its Significance	68
* Historical review	70
Enterobacterial Common Antigen E.C.A.	77
- Common Teichoic Acid Antigen	98
* Teichoic acid antibodies in staphylococcal and non-staphylococcal infection	98
* Teichoic acids as group antigens	99
- Staphylococcus Coagglutination Tests S.C.T.	111
* Staphylococcus coagglutination test	120
- Comparative Study Between Staphylococcal Coagg- lutination And Other Tests For Antigen Detection	122
- Evaluation Of Other Comparative Tests For Ag Detection	128
- Non-Specific Agglutinins And How To Get Rid Of It	133
* The effect of heat on antibodies	135
* Acetone-ether extract	150
* Salting out technique	152
* Cowan I absorption	153
* Effect of Kaolin treatment on serum immuno- globulins	157
* MATERIAL AND METHODS	160
Patients	160
- Controls	161
- Clinical Specimens	161
- Microbial Examination Of Urine	161
- Microbial Examination Of Blood	162
- Preparation Of Immunizing Bacterial Antigen	164
- Preparation Of Stock Candida Albicans Yeast Cell Suspension Antigen	165
- Preparation Of Bacterial Antisera	168
- Bleeding From The Ear Vein Of Rabbits For Trial Testing Of The Antibody Titre	168

	Page
- Titration Of Antibody Level Of Antisera	169
- Staphylococcal Coagglutination Test	171
* Preparation of stabilized staphylococcal coagglutination reagent	171
* Preparation of sensitized staphylococcal reagents	172
- Removal Of Non-Specific Agglutinins From Serum Samples	174
* Serum dilution method	174
* Kaolin treatment	175
* Adsorption of the sera with staphylococcal preparation (Cowan 1) strain	175
* Thermodissociation method	176
* Conclusion	176
- The Procedure Of The Staphylococcus Coagglu- tination Test (S.C.T.)	177
* RESULTS	179
* DISCUSSION	218
* SUMMARY AND CONCLUSION	239
* REFERENCES	243
* ARABIC SUMMARY	

ABBREVIATIONS

A.L.L.	= Acute lymphatic leukemia.
A.M.L.	= Acute myeloid leukemia.
Asp. flavus	= Aspergillus flavus.
Asp. fumigatus	= Aspergillus fumigatus.
Asp. niger	= Aspergillus niger.
B. catarrhalis	= Branhamella catarrhalis.
C. albicans	= Candida albicans.
C.L.L.	Chronic lymphatic leukemia.
C.M.L.	= Chronic myeloid leukemia.
Cl. perfringens	Clostridium perfringens.
C.I.E.P. = C.I.E.	= Counterimmunoelectrophoresis.
Crypt. laurentii	= Cryptococcus laurentii.
Crypt. neoformans	= Cryptococcus neoformans.
Crypt. urgiuttulatus	= Cryptococcus urgiuttulatus.
E.C.A.	= Enterobacteriaceae common antigen.
ELISA	= Enzyme linked immunosorbent assay.
E. coli	= Escherichiae coli.
H. influenzae	= Haemophilus influenzae.
Kieb. pneumoniae	= Klebsiella pneumoniae.
L. monocytogenes	= Listeria monocytogenes.
L. pneumophila	Legionella pneumophila.
M. avium	= Mycobacterium avium.
M. bovis	= Mycobacterium bovis.
M. fortuitum	= Mycobacterium fortuitum.
M. kansasii	= Mycobacterium kansasii.
M. tuberculosis	= Mycobacterium tuberculosis.
M. vaccae	= Mycobacterium vaccae.
N. lactamica	= Neisseria lactamica.
N. meningitidis	= Neisseria meningitidis.

Pr. morgani	= Proteus morgani.
Ps. aeruginosa	= Pseudomonas aeruginosa.
R.I.A.	= Radioimmunoassay.
Salm. agalactiae	= Salmonella agalactiae.
Salm. enteritidis	= Salmonella enteritidis.
Salm. typhi	= Salmonella typhi.
Shig. sonnei	= Shigella sonnei.
Staph. aureus	= Staphylococcus aureus.
S.C.T.	= Staphylococcal coagglutination test.
Strept. pneumoniae	= Streptococcus pneumoniae.
T. glabrata	= Torulopsis glabrata.
Lx. = L.A.	= Latex test.

**INTRODUCTION AND
AIM OF THE WORK**

I N T R O D U C T I O N
A N D A I M O F W O R K

Alterations in the defence mechanisms, whether congenital, spontaneously acquired, or iatrogenic are characterized by unusual susceptibility to infection. This alterations occurred in the course of many illnesses such as chronic debilitating diseases, neoplastic diseases, or patients under cytotoxic drugs, chemotherapy or irradiation.

Immunocompromised hosts refer to those patients whose underlying condition and/or therapy increases their susceptibility to infection. Organisms with little virulence for the normal human host become life threatening pathogens in those hosts.

The most common pathogens in those patients are : bacterial as E. coli, Ps. aeruginosa and Staph. aureus; fungal as Candida albicans, Aspergillus species, and Cryptococcus neoformans (Rotstein et al., 1985).

Opportunistic infections with yeasts and molds are increasingly demonstrated in patients with neoplastic diseases. Candida species, Aspergillus species and Cryptococcus neoformans remain the most common but other organisms are being encountered as pathogens. With the exception of cryptococcus most opportu-

nistic fungal infections are difficult to diagnose. Opportunistic fungal infections have become important causes of sickness and death in the immunosuppressed patients. They pose difficult problems of diagnosis and treatment. Other risk factors for those hosts include the excessive use of broad-spectrum antibiotics, high dose corticosteroids, indwelling venous catheter (as used for parenteral nutrition) and prosthetic devices (Fudenberg, 1980; and Kerr et al., 1983).

Cultural methods for detection of pathogens are time consuming in those hosts, so immunochemical detection of bacterial, fungal or viral antigens were tried to save time (Maccani, 1981).

Infection in immunocompromised host is life-threatening so specific antimicrobial therapy should be commenced as soon as possible. Recently the demonstration of bacterial antigens for serological methods had been shown to be of value in the etiological diagnosis of meningitis, septicemia and respiratory infection, when the specimens have failed to grow bacteria in culture (Leinonen, 1980).

Various methods exist for antigen detection, but not all are equally applicable since they vary in sensitivity, specificity, ease of performance and costs of analysis. Latex agglutination and staph. coagglutination tests were tried in the last few years, because these tests require little equipment and can be done rapidly, often within 10 or 15 minutes. They also

require a minimal amount of expertise (Bennet, 1983). They are also cheap and are as sensitive as counter immunoelectrophoresis and more sensitive than Gram stain and culture in diagnosing infections (White et al., 1981).

THE AIM OF WORK

- (1) To assess what types of pathogens are most commonly encountered in the immunocompromised hosts in Egypt.
- (2) To investigate the role of certain bacteria (E. coli, Staph. aureus and Ps. aeruginosa) and fungi (Candida albicans, Aspergillus niger, Asp. flavus, Asp. fumigatus, and Cryptococcus neoformans) in the immunocompromised host.
- (3) To compare cultural and antigen detection techniques for blood, urine and other body fluids, (whenever possible) of those patients in order to find a simple, rapid and sensitive method for identifying the causative pathogen in the immunocompromised patients.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

DEFINITION OF IMMUNOCOMPROMISED HOST :

Alterations in defence mechanisms occurred during the course of many illnesses (e.g. acute non lymphocytic leukemia, lymphomas, multiple myeloma, solid tumours, transplantation of bone marrow or kidney) (Ronald and Riben, 1981).

Aplastic anaemia, cytotoxic drugs, immunosuppressive therapy, excessive use of broad-spectrum antibiotics, high-dose corticosteroids and indwelling catheters (as used for parenteral nutrition and prosthetic devices) were other factors which compromised the host defences (Troungos et al., 1983).

The term "immunocompromised host or immunosuppressed" refers to those patients whose underlying condition and/or therapy increases their susceptibility to infection.

Immunodeficiency states whether congenital, spontaneously acquired, or iatrogenic are characterized by unusual susceptibility to infection (Harrison's, 1980).

CAUSES OF IMMUNOSUPPRESSION :

(A) Primary Immunosuppression :

Primary immunodeficiencies may be either congenital (e.g.