

COLLECTION AND HANDLING OF SPECIMENS FOR MICROBIOLOGICAL EXAMINATION

Pages with reference to book, From 94 To 95

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It is axiomatic that material should be collected where the suspected organism with as little external contamination as possible is most likely to be found. This is particularly true of draining lesions. Another factor contributing to the successful isolation of the causative agent is the stage of the disease at which the specimen is collected for culture. Enteric pathogens are present in much greater numbers during the acute or diarrhoeal stage of intestinal infections, and they are more likely to be isolated at that time. Viruses responsible for causing Meningoencephalitis are isolated from cerebrospinal fluid with greater frequency when the fluid is obtained during the onset of the disease rather than at a time when the symptoms of acute illness have subsided. There are occasions when the patient must contribute actively in the collection of a specimen, such as with a morning sputum sample. He should be given full instruction in this regard.

Blood Cultures

The presence of living micro-organisms in the patients's blood almost always reflects active and possible spreading infections in the tissues. A transient bacteremia frequently occurs during the course of many diseases, including pneumococcal pneumonia, bacterial meningitis, urinary tract infection and generalized Salmonella infections. Wound infections caused by a beta haemolytic streptococci, by staphylococcus aureus and by bacteroides species, infections of the gall bladder and biliary tract, osteomyelitis, peritonitis, and puerperal sepsis show a transient positive blood culture, which is also a frequent concomitant of operative manipulation in chronically infected areas as in instrumentation of the urinary tract, dental extraction, etc. It is generally unrewarding to attempt to isolate the causative organism by culturing the blood in cases of tetanus, diphtheria, shigellosis or tuberculosis. The indications for obtaining blood cultures are a sudden relative increase in the pulse rate and temperature of the patient, a change in sensorium, and the onset of chills, prostration, and hypotension. Other indications include a prolonged, mild, and intermittent fever in association with a heart murmur. Bacteremia is continuous in endocarditis, endarteritis, uncontrolled infections, typhoid fevers and brucellosis. It is usually intermittent in other infections. Timing in the collection of cultures in endocarditis, for example, may not be critical; however, in other cases, timing of the collection is important because the bacteremia is usually intermittent and may precede the onset of fever or chills by as much as one hour. In patients with suspected bacterial endocarditis three blood cultures are sufficient to isolate the etiological agent in nearly all cases. These should be collected separately and the condition of the patient permitting, at no less than hourly intervals within a 24 hours period. In all other cases blood culture should be taken. A single negative blood culture should never be depended upon to eliminate the possibility of a bacteremia, because a single specimen may be sterile even though the blood stream as a whole is infected. A minimum of three cultures taken at half hour intervals is recommended preferably just prior to onset of fever. The blood for culture be collected aseptically, first by cleansing the skin with 70% alcohol and then applying 2% iodine in concentric fashion to the venipuncture site. Because of the lower incidence of skin hypersensitivity to ioclophors, they may be used in lieu of iodine. Instant antisepsis never occurs, and the iodine or iodophors should remain intact on the skin for at least 2 minutes. The intended venipuncture site should not then be touched unless the fingers used for palpation are similarly disinfected. After the venipuncture, any residual iodine should be removed with an alcohol sponge or pad. It is essential that blood be inoculated into culture media at the bed side of the patient on a 10% (vol / vol) basis to counteract the normal bactericidal activities of chemical and cellular mediators of immunity.