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15th EDITION

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signs are generalized swelling and inflammation of the finger, tenderness over the flexor tendon sheaths, careful maintenance of a flexed finger position, and exquisite pain on active or passive finger extension. Fever, lymphangitis, lymphadenitis, and leukocytosis are usual. **Treatment** is surgical drainage plus antibiotics. Gram stain of the pus should dictate antibiotic choice; streptococci and staphylococci are the usual pathogens.

6. BACTEREMIA AND SEPTIC SHOCK

Bacteremia connotes *invasion of the circulation by bacteria*. The term **septicemia** is reserved for *situations in which bacteremia is associated with clinical manifestations of infection*. Bacteremia commonly, and usually transiently, accompanies various surgical manipulations (eg, incision of an abscess); or it may result from colonization of indwelling intravenous devices and urethral catheters. (For infants, see also NEONATAL SEPSIS AND NEONATAL MENINGITIS under NEONATAL INFECTIONS in Vol. II, Ch. 23.) Bacteremia may be intermittent or sustained, and may cause severe consequences. In patients who abuse IV narcotics, gram-positive bacteremia is common and may lead to right-sided bacterial endocarditis even in the absence of cardiac murmurs. The bacteremia of left-sided bacterial endocarditis is usually sustained and may be prolonged. Gram-negative bacteremia is usually intermittent and generally follows primary infection in the GU tract, biliary tree, GI tract, lungs, or, less commonly, skin, bones, or joints. In many patients with chronic diseases no primary focus of infection is apparent.

Symptoms and Signs

Few clinical manifestations are unique to bacteremia. Although variable, fever is almost always present and may be intermittent, with wide diurnal variations (septic, or "spiking"). Chills are common at the onset. Skin eruptions are also common, and may be petechial, purpuric, papular, pustular, or vesicular. Usually gram-negative bacteremia begins abruptly with chills, fever, nausea, vomiting, diarrhea, and prostration.

Diagnosis

The presence of bacteremia is established by blood cultures, which should be performed for both aerobic and anaerobic organisms. A single negative culture does not exclude bacteremia; moreover, in some patients, especially those with prior antibiotic therapy, blood cultures never do become positive. If the patient is not very ill, no more than 6 blood cultures should be performed. In severely ill patients, 2 blood cultures taken 30 min apart before treatment is instituted should suffice. In most cases, treatment is required before results of blood cultures become available.

Complications

Metastatic infection of the meninges or of serous cavities, such as the pericardium or larger joints, may occur. Endocarditis (see also ENDOCARDITIS in Ch. 27) may be the sequel of bacteremia if the pathogen is a streptococcus or staphylococcus, but rarely occurs as a result of gram-negative bacteremias. **Metastatic abscesses** may occur almost anywhere and, when extensive, produce symptoms and signs characteristic of infection in the organ affected. Multiple abscess formation is particularly common with staphylococcal bacteremia. Bacteremia may result in **septic shock,** which is discussed separately, below.

Prognosis

Transient bacteremias associated with surgical procedures, indwelling IV catheters, or urinary catheters are often undetected and probably do not require therapy. However, persistent bacteremia is dangerous; the prognosis depends on the ability to eliminate the source of infection with surgery or antibiotics, and on the status of the underlying disease. When multiple organisms are recovered consistently (polymicrobial bacteremia), a poor outcome can be expected. Bacteremia unresponsive to treatment because of inadequate antibiotic therapy, poor host resistance, or delay in diagnosis is often fatal.

Treatment of bacteremia is discussed below with septic shock.

SEPTIC SHOCK

When bacteremia is associated with inadequate tissue perfusion, especially with gram-negative organisms or meningococci, **septic shock** with hypotension, vascular collapse, renal failure, and death may ensue. Septic shock usually occurs when bacteremia is due to gram-negative organisms and generally in hospitalized patients with underlying diseases. Predisposing factors include diabetes mellitus; cirrhosis; leukemia; lymphoma; disseminated carcinoma; surgical procedures; antecedent

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