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Over the past decades, considerable changes have occurred in the types of bacteria causing infection in febrile patients with neutropenia. There has been a shift towards bacteremia due to organisms other than the classical gram-negative rods, with gram-positive cocci as the predominant group, notably coagulase-negative staphylococci (CNS) and nonhemolytic oral streptococci (strep). Clinical syndromes associated with these two prevalent types of gram-positive coccal bacteremia as well as the risk of complications vary. Often, the course of bacteremia due to CNS is uncomplicated even when the catheter as the likely source of the infection has not been removed. Also, despite resistance of the organism to oxacillin patients with CNS bacteremia receiving delayed glycopeptide therapy defervesce as rapidly as those receiving upfront glycopeptides. Whether initial therapy with newer agents such as oxazolidinones, streptogramins, or one of the newer fluoroquinolones can decrease the time to defervescence, is unknown. The frequency of strep infection appears to be partly dependant on the cumulative dose of the cytotoxic agent Ara-C, or the use of anthracyclines in BMT patients, probably in association with different degrees of mucosal damage. The case-fatality rate is 10% or greater. Defervescence within 2 or 3 days is unusual. Complications including encephalopathy, ARDS, and septic shock have been reported. The pathogenesis of these complications is unknown. Patients with both CNS or strep bacteremia given initial empirical therapy with ceftazidime (with or w/o aminoglycoside) appear to require modifications more often than do patients initially receiving a carbapenem or piperacillin/tazobactam. However, therapy of strep bacteremia with piperacillin-tazobactam or a carbapenem may fail despite full in vitro susceptibility, but there is no convincing data showing that the addition of a glycopeptide changes the outcome in this situation. Glycopeptide use in patients without documented bacteremia due to β -lactam-resistant, glycopeptide-susceptible gram-positive organisms is likely to be of no benefit to the patient.