Febrile Neutropenia

Febrile neutropenia, or neutropenic fever, is an oncologic emergency that usually occurs in patients receiving chemotherapy for cancer treatment. It is characterized by fever, an absolute neutrophil count below 500/?L, and an increased risk of infection. Diagnosis is achieved through blood cultures while management involves administration of broad spectrum antibiotics.

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Characteristics

Oncologic Emergency
Orc Emergency-lights
Febrile neutropenia is an oncologic emergency that occurs commonly in patients receiving chemotherapy. The severity of this disease ranges greatly.

Fever
Fever-beaver
As its name implies, fever is a hallmark of this disease. A single oral temperature ? 38.3 °C (101°F) or a temperature of ? 38 °C (100.4 °F) for 1 or more hours is diagnostic in the context of neutropenia.

Absolute Neutrophil Count < 500/µL
Nude-trojans Less-than-sign (500) Race-car
Temperature monitoring and absolute neutrophil count (ANC) are used to diagnose this disease. ANC < 500/?L or an acute drop to <500/?L within 48 hours is diagnostic.

Increased Risk of Infection
Up-arrow Risk Infectious-bacteria
Due to decreased neutrophil count and concurrent chemotherapy, patients with febrile neutropenia are at an increased risk of infection. Empiric antibiotics and admission are indicated for high risk patients to reduce mortality. The most common gram-positive infections in patients with neutropenic fever are coagulase-negative Staphylococci, MRSA, and Streptococcus viridans. The three most common gram-negative infections are E.coli, Klebsiella, and Enterobacter.

Diagnosis

Blood Cultures
Blood Petri-dish
Patients with febrile neutropenia must have infection ruled out. Failure to recognize an ongoing infection in an immunosuppressed patient can lead to serious morbidity or mortality. Patients should thus get blood cultures upon arrival. Empiric antibiotic regimen can be altered upon a positive culture or stopped if the culture is negative. In addition to blood cultures, several laboratory investigations like inflammatory markers, renal panel, urinalysis +/- urine culture, and CBC are usually performed to monitor clinical status.

Management

Broad Spectrum Antibiotics
Broad-spectrum of Colors with ABX-guy
Patients with febrile neutropenia should be given empirical broad spectrum antibiotics. Even if the patient's blood cultures turn out to be negative, there is significant mortality and morbidity associated with delays in the treatment of infections. After assessment of a patient's relative risk of severe complications with the MASCC score, antibiotic regimen can be altered. For example, low risk patients can be managed on an outpatient basis with oral antibiotics. For high risk patients, antipseudomonal beta-lactam antibiotics are recommended.
