Neutropenia, Causes of

Neutropenia is a condition that occurs when a certain kind of white blood cells called neutrophils became lower than normal. These cells are made in the bone marrow and fight infections. These cells protect against bacteria and viruses. The fewer number of neutrophils you have, and the longer your body remains without it, you become more at risk for a severe infection.

The cause of neutropenia may be hard to determine. However, it is usually due to three main problems:

- Decreased production of neutrophils.
- Increased destruction of neutrophils.
- The white blood cells (WBCs) are in areas where they cannot fight infections.

The infection may be too overwhelming for the white cells and the bone marrow to keep up.

DECREASED PRODUCTION OF WHITE BLOOD CELLS MAY COME FROM:

- Medications that may damage the bone marrow or neutrophils. This includes chemotherapy.
- Genetics may cause conditions where less blood cells are formed. This also causes *anemia*, which means there are not enough red blood cells (RBCs).
- Cancer may cause decreased formation of WBCs because of destruction of the bone marrow. This is where many of the cells are produced.
- Radiation treatments that are often given for treatment of cancer and may destroy the WBC producing areas.
- Vitamin deficiency prevents adequate WBCs from being formed. (One of the building blocks is missing.)
- Some pesticides destroy the body's ability to form enough WBCs.

INCREASED DESTRUCTION OF WHITE BLOOD CELLS MAY COME FROM:

- Overwhelming infections.
- Hemolytic anemia. This is when the body destroys its own blood cells. Sometimes it is caused by the body itself in autoimmune disorders or by medications.
- Chemotherapy treatments

REMOVAL OF THE WBCS IN THE BODY SO THEY ARE NOT AVAILABLE TO FIGHT INFECTION:

Sequestration and *margination* are processes in which neutrophils are removed from the general blood flow and redistributed within the body. These processes can occur because of:

- Dialysis procedures. This is blood cleaning in kidney problems.
- Conditions where the spleen gets enlarged. WBCs are held in the spleen and are not available to the rest of the body for fighting infection.
- Overwhelming infections where the WBCs are held in the area of a large infection. They are not available to the rest of the body to adequately fight disease.

There are no specific symptoms or problems from neutropenia other than those which may come from a possible infection as a result of a low WBC.

Document Released: 06/09/2003 Document Re-Released: 03/16/2010
ExitCare® Patient Information ©2011 ExitCare, LLC.