Leukemia: bone marrow transplant essay

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Leukemia is a type of cancer of the blood or bone marrow characterized by an abnormal increase of immature white blood cells called “ blasts”. Leukemia is a broad term covering a spectrum of diseases. In turn, it is part of the even broader group of diseases affecting the blood, bone marrow, and lymphoid system, which are all known as hematological neoplasm’s.

Causes: The word leukemia, which means ‘ white blood’, is derived from the disease’s namesake high white blood cell counts that most leukemia patients have before treatment. The high numbers of white blood cells are apparent when a blood sample is viewed under a microscope. Leukemia, like other cancers, results from mutations in the DNA. Certain mutations can trigger leukemia by activating ontogenesis or deactivating tumor suppressor genes, and thereby disrupting the regulation of cell death, differentiation or division.

These mutations may occur spontaneously or as a result of exposure to radiation or carcinogenic substances. Viruses have also been linked to some forms of leukemia. Experiments on mice and other mammals have demonstrated the relevance of retroviruses in leukemia, and human retroviruses have also been identified. The first human retrovirus identified was human T-lymph tropic virus, or HTLV-1, which is known to cause adult T-cell leukemia.

Signs and symptoms

Common symptoms of chronic or acute leukemia[14] Damage to the bone marrow, by way of displacing the normal bone marrow cells with higher numbers of immature white blood cells, results in a lack of blood platelets, which are important in the blood clotting process. This means people with

leukemia may easily become bruised, bleed excessively, or develop pinprick bleeds (petechiae). White blood cells, which are involved in fighting pathogens, may be suppressed or dysfunctional. This could cause the patient’s immune system to be unable to fight off a simple infection or to start attacking other body cells.

Because leukemia prevents the immune system from working normally, some patients experience frequent infection, ranging from infected tonsils, sores in the mouth, or diarrhea to life-threatening pneumonia or opportunistic infections. Finally, the red blood cell deficiency leads to anemia, which may cause dyspnea and pallor. Some patients experience other symptoms, such as feeling sick, having fevers, chills, night sweats, feeling fatigued and other flu-like symptoms. Some patients experience nausea or a feeling of fullness due to an enlarged liver and spleen; this can result in unintentional weight loss.

Blasts affected by the disease may come together and become swollen in the liver or in the lymph nodes causing pain and leading to nausea.[15] If the leukemic cells invade the central nervous system, then neurological symptoms (notably headaches) can occur. Uncommon neurological symptoms like migraines, seizures, or coma can occur as a result of brain stem pressure. All symptoms associated with leukemia can be attributed to other diseases. Consequently, leukemia is always diagnosed through medical tests.

The word leukemia, which means ‘ white blood’, is derived from the disease’s namesake high white blood cell counts that most leukemia patients

have before treatment. The high number of white blood cells are apparent when a blood sample is viewed under a microscope. Frequently, these extra white blood cells are immature or dysfunctional. The excessive number of cells can also interfere with the level of other cells, causing a harmful imbalance in the blood count. Some leukemia patients do not have high white blood cell counts visible during a regular blood count. This less-common condition is called aleukemia.

The bone marrow still contains cancerous white blood cells which disrupt the normal production of blood cells, but they remain in the marrow instead of entering the bloodstream, where they would be visible in a blood test. For an aleukemic patient, the white blood cell counts in the bloodstream can be normal or low. Aleukemia can occur in any of the four major types of leukemia, and is particularly common in hairy cell leukemia.