Introduction to Oncology Nursing and the Care of the Oncology Patient

Cancer Basics: The Beginning

The following introductory information is directly cited from the NCI web page "What is Cancer" facts sheet. For additional information double click http://www.cancer.gov for direct access to additional cancer basics imaging and facts sheets.

What is cancer?

Cancer is a group of many related diseases. All cancers begin in cells, the building blocks that make up tissues. Cancer that arises from organs and solid tissues is called a solid tumor. Cancer that begins in blood cells is called leukemia, multiple myeloma, or lymphoma.

Normally, cells grow and divide to form new cells as the body needs them. When cells grow old and die, new cells take their place. Sometimes this orderly process goes wrong. New cells form when the body does not need them, and old cells do not die when they should.

Cellular replication in normal cells is a direct result of the needs of the organism. Cells transition through a cell cycle. Cyclins are proteins that activate various phases of the cell cycle. Cells will go through checkpoints to "inspect "their work. Differentiation is related to immortality. Remember that differentiated cells have a "biological clock" allowing them a certain number of times that they can divide before they must die. Cancer cells can originate from a single

abnormal (clonal cell) that does not have a "biological clock". Cancer cells can affect tumor suppressor genes which are proteins that would normally suppress the cell cycle until the "work can be corrected". After cancer colonies are about 1 mm in diameter they already have a blood supply that allows them to continue to proliferate at a rate that is not compensated for by the rate of cell death (Lowitz & Casciato, 2004).

To review in detail the cell cycle - click the following hyperlink
http://en.wikipedia.org/wiki/cell_cycle

The extra cells form a mass of tissue, called a growth or tumor. Tumors can be either benign or malignant. Benign tumors do not spread to other parts of the body, and they are rarely a threat to life. Malignant tumors can spread and may be life threatening.

What is primary cancer?

Cancer can begin in any organ or tissue of the body. The original tumor is called the primary cancer or primary tumor. It is usually named for the part of the body or the type of cell in which it begins.

What is metastasis and how does it happen?

Metastasis means the spread of cancer. Cancer cells can break away from a primary tumor and enter the blood stream or lymphatic system. When cancer cells spread and form a new tumor in a different organ, the new tumor is a metastatic tumor. The cells in the metastatic tumor came from the original tumor. This means that if breast cancer spreads to the lungs, the metastatic tumor in the lung is made up of cancerous breast cells. In this case, the disease in the lungs is metastatic breast cancer generally look the same as the cancer cells in the breast.

To review the process of metastasis click the following hyperlink
Video of spread http://www.mayoclinic.com/health/cancer/mm00638

Where does cancer spread?

Cancer cells can spread to almost any part of the body. Cancer cells frequently spread to lymph nodes near the primary tumor. This is called lymph node involvement or regional disease. Cancer that spreads to other organs or to lymph nodes far from the primary tumor is called metastatic disease. This may be referred to as distant disease.

The most common sites of metastasis from solid tumors are the lungs, bones, liver, and the brain. Some cancers tend to spread to certain parts of the body. Lung cancer often metastasizes to the brain or bones, and colon cancer frequently spreads to the liver. Prostate cancer tends to spread to the bones. Breast cancer commonly spreads to bones, lungs, liver and brain. However, each of these cancers can spread to other parts of the body as well.

Since blood cells travel throughout the body, leukemia, multiple myeloma, and lymphoma cells are usually not localized when the cancer is diagnosed. Tumor cells may be found in the blood, several lymph nodes, or other parts of the body such as the liver or bones. This type of spread is not referred to as metastasis.

Some people with metastatic cancer do not have symptoms. Their metastases are found by x-rays and other tests performed for other reasons. When symptoms of metastatic cancer occur, the type and frequency of the symptoms will depend on the size and location of the metastasis. For example, cancer that spreads to the bones is likely to cause pain and can lead to bone fractures. Cancer that spreads to the brain can cause a variety of symptoms, including headache, seizures, and unsteadiness. Shortness of breath may be a sign of lung involvement. Abdominal swelling or jaundice can indicate that cancer has spread to the liver.

Sometimes a person's primary cancer is discovered only after the metastatic tumor causes symptoms. For example, a man whose prostate cancer has spread to the bones in his pelvis may have lower back pain before he experiences any symptoms from the primary tumor in the prostate.

Metastatic cancers may be found before or at the same time as the primary tumor, or months or years later. When a new tumor is found in a patient who has been treated for cancer in the past, it is more often a metastasis than another primary tumor.

Review of Key Points

- Cancer occurs when cells become abnormal and grow without control
- The place where the cancer started is call the primary cancer or the primary tumor
- Metastatic cancer occurs when cancer cells spread from the place where the cancer started to other parts of the body
- When cancer spreads, the metastatic cancer has the same type of cells and the same name as the primary tumor
- The most common sites of metastasis are the lungs, bones, liver, and brain
- Treatment for metastatic cancer usually depends on the type of cancer as well as the size and location of the metastasis.