

## **Introduction**

### **1.1 The breast:**

The human breast tissue mainly made up of special glands called lobules (milk- producing glands) that surround branches of ducts like leaves on a tree (Figure 1.1) (Zimmerman, 2004). Most breast cancers begin in the ducts (ductal) and some begins in the lobules (lobular) and the rest of other tissues (cancer, 2008). The size of the breast tissue is genetically determined and it may extend from the collarbone to the lowest ribs or from the breast bone to the back of the armpit (Zimmerman, 2004). The lobules and ducts embedded in a stroma of fat and fibrous connective tissues, nerves, blood vessels and lymphatic vessels. The lymphatic vessels are like veins except that they carry lymph instead of blood. They drain lymph which contains tissue fluid and waste products from the breast in to a series of filters called lymph nodes (Figure 2). These lymph nodes placed under the armpit (axillary lymph nodes), under the breast bone (internal mammary lymph nodes) and above the collarbone ( supra- or infraclavicular nodes). Usually, nodes contain different types of immune system cells that plays an important role in destroying and digestion of invading foreign organisms and antigens. When breast cancer spread, the cells tend to invade the lymphatics and travel to the axillary lymph nodes causing this area to swell. If breast cancer cells have spread to the axillary lymph nodes, this will indicate that they are likely to have spread to other organs of the body as well.

Surgeons will often tend to remove a number of nodes in order to check for the presence of malignant cells. The presence or absence of cancer cells in these nodes is important for determining treatment options and diagnosis (Zimmerman, 2004 an cancer, 2008)

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