**Lung Cancer**

Lung Cancer is defined as an abnormal growth of cells which tend to divide and grow in an uncontrolled way and in some cases, to metastasize. (Falk & Williams, 2010.). Lung cancer is the common cancer in Australia with the incidence more among women. It is commonly occurs in individuals more than 50 years of age with the history of cigarette smoking. This case study is about a 70 year old female called DH who has a diagnosis of Small Cell Lung Carcinoma, limited cell disease from August 2007. SCLC is a neuroendocrine tumor characterized by aggressive tumor growth and early lymphatic and hematogenous metastases (Keshamouni, Arenberg & Kalemkrian, 2009). It explains the pathophysiology, clinical manifestations, diagnostic procedures, medications, nursing management, personal reflection, recent advancement in nursing practice and discharge plan of SCLC.

**Past and present history**

DH had no response with the initial treatment with Carboplatin and VP 16 and subsequently treated with Carboplatin and Taxol from December 2007 to March 2008. Later, patient was detected with parotid tumor (Warthin’ stumor) which is a benign neoplasm of the salivary glands and she received radiation therapy in the later months. Patient underwent mammogram, CT/Abdomen and pelvis and chest x-ray in 2009 and identified an original tumor in the left hilum. Patient had endoscopy and colonoscopy which was positive for diverticuli. PET-CT had done and detected areas of enlarged nodes located around the bronchial tree, abdomen and left axillary. In 2009 patient had an appointment with her primary care physician to have an area in the abdomen removed and biopsied. Patient scheduled for follow up visit with oncologist. She had a history of hypertension, medical arthritis and had paraesthesias and numbness from Taxol therapy and her blood test are stable.

**Pathophysiology**

The pathogenesis of primary lung cancer is not well understood (Brown & Edwards, 2008). Small cell carcinoma originates from epithelial cells of the lungs which occur in the central part of the lungs (Madara & Pomarico-Denino, 2008). There is inflammation of cells lining the airways into the lung, with loss of the lining cells (ciliated cells) which clears secretions from the airways, and over growth and piling up of deeper cells. (Falk & Williams, 2010). Pathological changes in the bronchial system show non-specific inflammatory changes with hyper secretion of mucus (Brown & Edwards, 2008). The normal plump lining cells of the airway change to flatter type. This is referred to as metaplasia. The next stage is the formation of small cancer which is not invaded or spread, which starts somewhere in the dysplastic area. The small cancer then turns into invasive cancer then to malignant tumor which then goes to lymph nodes and other parts (Falk & Williams, 2010). Lung cancer metastasis takes place primarily by direct extension and through the blood circulation and lymph system (Brown & Edwards, 2008). These tumors grow aggressively, metastasize readily and has poor prognosis (Madara & Pomarico-Denino, 2008).

**Clinical manifestations**

DH is complaining of non-exertional chest pain, paresthesias and numbness. There can be different manifestations for other individuals with similar diagnosis such as cough, wheeze, hemoptysis, stridor, dyspnea, pneumonia, anorexia, fever suppressed immunity and weight loss (Caesar & Tatum, 2008). DH had stable weight and good appetite.

**Medications**

Chemotherapy is the treatment of choice in extensive diseases of SCLC (Caesar & Tatum, 2008). DH was treated with Carboplatin, Taxol, VP 16 and radiation therapy.

**Carboplatin:** DNA replication inhibitor by cross linking alkylating agent.

*Side effects*: Mylosuppression, thrombocytopenia, nausea vomiting, electrolyte imbalance, ototoxicity, neuropathy, nephrotoxicity, anemia, allergic reactions and reproductive problems. (Perry, 2008).

*Contra indications*: Pregnancy and hypersensitivity to carboplatin

**VP 16:** Inhibits DNA synthesis

*Side effects*: Alopecia, mucositis, abnormal liver function, nephrotoxicity, myelosuppression, ototoxicity, thrombocytopenia, nausea vomiting, anorexia,leucopenia and neurotoxicity.

*Contra indications*: Myelosuppression, hypersensitivity and hepatic impairment. (Perry, 2008).

**Taxol:** Promotes assembly of microtubules and stabilizes by blocking of mitosis and prevents transition of cells.

*Side effects:* Myelosuppression, bradycardia, elevation of LFT, nausea, vomiting, diarrhea and neurotoxicity ( Yarbro, Wujcik & Gobel, 2011).

*Contra indications*: Hypersensitivity and pregnancy.

The main nursing responsibilities when administering medication is to inform the client about possible side effects. Check vital signs and watch for any signs of adverse reaction during chemotherapy course. Patient can give anti emetic drugs, antacid and proton pump inhibitors for nausea and vomiting as per physicians order. Dietary modifications such as soft to liquid diet and nutritional supplement can be given. Evaluate blood counts to find out infection (Yarbro, Wujcik & Gobel, 2011).

**Radiation therapy**: Major component of the curative and palliative treatment of cancer which measured in grays. DH received 5,580 cGY and 31 fractions were administered over 70 days. The synergistic action between the drug and radiation is often desired as antitumor effect and it destroys cancerous cells. (Perry, 2008).

*Side effects*: Pneumonitis, dry cough, dyspnea on exertion, fever, pericarditis with symptoms of chest pain, ECG changes, hoarseness, pericardial friction rub, erythemia and necrosis.

The nursing care includes assessment and intervention to prevent or minimize the occurrence of side effects and to provide relief of symptoms (American Cancer Society, 2004). Skin care includes:

* Handle gently
* Wash with warm water
* Never scrub
* Use moisturizing soap
* Do not expose to sun
* Moisture skin
* Avoid ice packs

**Physical examination**

Head to foot examination is done in the physical assessment. Lung auscultation is done, respiratory rate and depth, palpation of supraclavicular area for tumor or lymphatic involvement and for early detection of disease. Monitor vital sign and oxygenation problem and note edema of neck face, upper extremities and thorax. Check for vocal cord paralysis and hoarseness for lymph node enlargement (Life Nurses, 2010).

**Diagnostic studies**

Asymptomatic patients whose cancer is found on routine chest x-ray account for about 10 % of new cases. The result show the presence of the tumor or abnormalities associated with the tumor. It can also show the evidence of metastasis to other parts. CT scanning is non-invasive technique for assessing lung cancer (Brown & Edwards, 2008). It is used for the evaluation of shapes, borders and densities of nodules. Positron emission tomography scan is a helpful diagnostic tool in early clinical staging, evaluation of therapy response, recurrent tumor detection based upon increased glucose metabolism of cancer cells. (Heide, schmitted, Kaiser & Hinkelbein, 2010). It also allows measurement of unusual metabolic activity in normal and diseased tissues. Biopsy is usually the best method for detecting the presence of a malignant tumor (Brown & Edwards, 2008). Mammogram, ultrasounds are done for tissue analysis to find out any breast lesions. (American Cancer Society, 2004). Endoscopy and colonoscopy has done to find out the metastasis of the disease to the digestive system. Endoscopy was negative and colonoscopy was positive for diverticuli. Clients Lab Values were stable with Hgb -12.6, Hct -39.1. Platelets and WBC were improved from 312 to 371 and 7.52 to 8.0 respectively. Lymphocytes -14, Monocytes – 9.

**Nursing Management**

Nurses have to maintain patient’s quality of life and decreasing patient’s distress through education, symptom management and psychosocial support (American Cancer Society, 2004). Pain management is important in lung cancer because of cancer invasion to pleura or chest wall. Nurse should find out the location and characteristics of pain. Give analgesics as prescribed to control the pain. Anxiety and fear can be reduced through counseling to client and family and provide physical comfort. Encourage patients to express their feelings, give time to accept the denial of the situation. Evaluate the clients understanding of the diagnosis and give opportunity to ask questions. Provide low salt, low cholesterol, high calorie and nutritious diet. Correctly perform procedures and initiate necessary life style changes. Encourage her to do light exercise which helps for numbness. Medication can be administered to relive side effects such as parasthesia. Explain the treatment, prognosis, follow up and discharge plan to client to remove fear. (Life Nurses, 2011).

**Recent Advancement**

Novel Therapies are a new advancement for SCLC to improve the treatment and prevent disease relapse.

* Interferon is use to attempt to improve remission duration and maintenance therapy to chemotherapy and radiotherapy.
* Thalidomide is an angiogenesis inhibitor and immunomodulator.
* Cancer Vaccines are anti-idiotypic antibody BEC2
* Bel-2 Antisense Strategies increase chemotherapeutic effect by suppressing of Bel-2 in tumors.
* Targeting the C-kit/stem cell Factor Receptor- STI571. Binding of stem cell factor to the kit receptor. (Carafaro, R. L, 2005).

**Personal Reflection**

Going back to my personal reflection, I was caring a chemotherapy patient in the oncology department. She had vomiting during her course and was crying about her disease condition. It was so difficult with her to cope with the treatment and disease. I had given an anti emetic injection, make her comfortable, then I talk to her and make her to understand the treatment and the side effects of the treatment also I talk about the disease. She shown a positive result after the education and was responding to the treatment.

**Discharge plan**

Discharge planning focuses on the client’s ability to function after a hospital or institutional stay. It also includes medication, involvement with medical specialists or significant supportive services and should make according to the type of requirement such as nutrition, body requirement, self-care deficit, high risk infection and injury. (Kirst-Ashman, 2010). Appropriate community references such as hospice referrals include anticipatory grieving, impaired skin integrity and pain. Ask the patient to monitor for symptoms that may recurrence and are advised to contact health care provider if notice any changes in the symptoms (American Cancer Society, 2004). Explain the client and the family about the importance of follow up visits and the possibilities of further chemotherapy and radiation therapy.

**Conclusion**

In conclusion Lung Cancer is a serious disease which has poor prognosis. It can detect by symptoms and with diagnostic studies. The main treatment includes chemotherapy and radiation therapy. Nursing management involves pain management, education and counseling to remove fear and anxiety and support the client and family for grieving.