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Lung Cancer - Stop Smoking and Start Living!

Lung cancer is the number one cause of cancer death in the world. The World Health Organization (WHO) healthsheet reported that approximately 1.3 million deaths annually are due to lung cancer. The incidence of lung cancer is increasing especially in the developing countries and this corresponds to the increase in the number of smokers.

The trend is worrisome as more are starting to smoke at a younger age. There is also a corresponding increase in the incidence of lung cancer in females with more picking up the habit.

The cigarette smoke contains 400 different types of chemicals, of which 40 of them are known carcinogens (cancer causing agents). The risk of developing lung cancer is directly related to the years of smoking and the number of cigarettes consumed which is jointly expressed as number of pack-years. The higher the pack-years, the higher the risk. Besides the harm to oneself, there is an inherent risk to the people in close proximity and the effects of passive smoking (environmental tobacco smoke) has been evaluated.

Several case-control studies have shown that spouses of smokers are at a higher risk of developing lung cancer compared to spouses of non-smokers. It has also been shown that work exposure to

environmental tobacco smoke increases the risk of lung cancer. It is estimated that passive smoking kills 5 people a day world-wide.

Lung cancer remains one of the deadliest cancers. The only proven cure for lung cancer is surgical resection. Unfortunately, only 10-20 percent of patients present with cancer that could be excised surgically. 80 percent of patients are diagnosed with the disease at an advanced stage which is mostly incurable. The statistics for patients with advanced stage lung cancers remains dismal, with only 5 percent of patients surviving more than 5 years. Can we do better? Especially with the advent of new targeted chemotherapeutic agents and sophisticated machines that deliver complex radiotherapy with greater precision and accuracy? The answer is a definite yes; that we are doing better with new drugs and new technology. But no, as we are not treating this disease at its roots – by eradicating the cigarette smoke and its known carcinogens.

Improved surgical management, facilities of anaesthesia and intensive post-operative care have increased the possibility of a complete surgical excision with less complication. Modern radiation techniques like Intensity Modulated Radiotherapy (IMRT), Radiosurgery and Image Guided Radiotherapy (IGRT) provide for more accurate and precise delineation of the tumour target leading to better cancer control and cure with fewer side effects.

Newer drugs like Bevacizumab (a targeted drug that specifically stops the blood supply to the cancer ie anti-angiogenesis) and Cetuximab (a new drug that specifically block a growth pathway of the cancer ie anti- Epidermal Growth Factor Receptor/ anti-EGFR) have been shown to increase the survival of lung cancer patients beyond what is expected in patients receiving conventional chemotherapy. Oral targeted therapy like Gefitinib and Erlotinib; which can be given as a maintenance therapy (long term treatment after initial chemotherapy) has been shown to improve the survival of lung cancer patients as well.

For most patients, this translates to a kinder experience as these new drugs have more tolerable side effects and toxicities compared to conventional chemotherapy. There is ongoing research studying new agents and trials comparing combination therapy to improve the outcome of lung cancer, bringing the landscape of cancer treatment to new frontiers.

Last but not least, to drive the age-old adage, prevention is better than cure. Knowing the fact that 90% of lung cancers is due to smoking, it is only logical to intensify the efforts to stop people from tobacco smoking through public awareness of the multiple deleterious effects of smoking and urging the authorities to take the lead on this. If you are a smoker, it is never too early to butt out the cigarette.



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Breakthroughs in Cancer Treatment and Management

Cancer is a common disease that affects one in three people around the world. It is a class of different diseases that have similar features but distinctive characteristics. This group of cancerous cells displays uncontrolled growth, invasion of and destruction of adjacent tissues, and sometimes spread beyond the original site of the disease.

Nearly all cancers are caused by abnormalities in the DNA of the cells. This may be caused by both external and internal factors. External cancer-causing factors include tobacco, chemicals, radiation and infectious organisms. Cancer that is caused by internal factors may be from inheritance of abnormal cells from birth, or mutations that occur from metabolism.

Once diagnosed, cancer is usually treated with a combination of surgery, chemotherapy, radiotherapy and newer approaches such as biological therapy. As research develops over the years, several breakthrough findings have been discovered in cancer management. Treatments are now becoming more specific for different varieties of cancer, acting specifically on detectable abnormal cells and at the same time minimising damage to normal cells.

One of the most prevalent cancers in Malaysia is colorectal cancer, being the first most common cancer in men and third among women. Colorectal cancer affects both the colon and rectum, and just like any other cancer, the cancer cells can break away and spread to other parts of the body.

Early detection increases the potential to cure the cancer, especially when it is still in stage 1 and 2 where the cancer is confined to the wall of the bowel or stage 3 where it involves the local lymph nodes.

Conventional approaches to colorectal cancer treatment include surgery, radiotherapy, systemic therapies (chemotherapy and targeted therapy) and supportive care. Systemic treatments,

drugs that destroy the cancer cells in the body, are the focus relating to breakthroughs in cancer treatment and management. Chemotherapy is one of the treatments under this approach. Depending on the extent of the cancer, chemotherapy has different goals. This treatment can be used to cure the cancer, to control the cancer or to relieve the symptoms caused by cancer.

Targeted therapy, another approach in systemic therapies, is proven to be more effective and tolerable than other current treatment options as they specifically attack cancer cells, leaving the majority of healthy cells unharmed. It is often used in combination with chemotherapy for synergistic anti-tumour effects.

Two concepts under targeted therapy are Angiogenesis and Epidermal Growth Factor Receptor (EGFR) inhibition, which have dramatically changed the way in which cancers are being managed today.

Angiogenesis is the growth of new blood vessels. In a normal healthy person, Angiogenesis is an important natural physiological process and is crucial in development, reproduction, wound healing and inflammation. In a patient with cancer, a large tumour relies on angiogenesis for survival, further growth and spread. Therefore, Angiogenesis inhibitor (or anti-Angiogenesis) is an agent that can prevent the formation of new blood vessels.

On the other hand, Epidermal Growth Factor Receptor (EGFR) is expressed in a variety of solid tumours and associated with poor prognosis in cancer treatment. Inhibition of EGFR via cetuximab, a monoclonal antibody can inhibit tumour replication, stimulate cell death, limit blood supply to the cancer cells, reduce the spreading of cancer cells and also able to recruit the body's immune system to combat cancer cells.

It is essential that oncologists select the most appropriate therapy for patients to generate superior treatment outcomes. This can be achieved by identifying the

presence of specific molecules in certain cancer types, which is known as biomarker. Large randomised studies have shown that biomarker-dependent tailored therapy is reflective of the developing trend in modern cancer treatment.

When it comes to colorectal cancer, the first important biomarker is called KRAS. There are two different types of the KRAS gene found in tumours – the 'wild type', or non-mutated KRAS gene and the mutated KRAS gene. The wild type gene leads to the expression of an unmutated KRAS protein and temporary activation of the EGFR pathway. The mutated KRAS gene on the other hand leads to the expression of a mutated KRAS protein and permanent switching-on of the EGFR pathway.

Studies indicated targeted therapy using cetuximab is effective in patients with colorectal cancer that expresses the unmutated KRAS protein than in those with mutant KRAS protein. This clearly shows that KRAS is an important biomarker in the management of colorectal cancer as it can determine which patients will benefit most from cetuximab, even before the treatment itself begins. So, it goes without saying that a KRAS test should be performed after diagnosis of colorectal cancer. For patients with mutant KRAS protein, the tumour may not respond to targeted therapy but other treatment options can be selected.

As mentioned earlier, targeted therapy can benefit patients with unmutated KRAS protein and is used alongside chemotherapy for improvement of overall disease and treatment outcomes. Both approaches present some side effects but they are generally temporary, reversible and manageable. In addition, these side effects can be reduced or reversed by medications.

In conclusion, to accurately identify the right patient for the specific tailored targeted therapy, future studies are being done to explore more predictive biomarkers. This will allow for more personalised treatment choices and continue to improve the survival rate of patients living with cancer.



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Breast Cancer – Early Detection Saves Lives!

Breast Cancer is the leading cause of cancer in Malaysia and the second most common cancer in the world after lung cancer. 1.3 million women will be diagnosed with breast cancer annually. Worldwide about 465,000 will die from the disease. It is estimated that in the UK and USA 1:8 women will develop breast cancer in their lifetime, and in Malaysia the incidence is about 1:19.

The actual cause of breast cancer is not known. Although we have identified the genes that can code for breast cancer (BRCA I and II), only 10 percent of breast cancers are hereditary. The majority of breast cancers are probably due to point mutations and occur de novo. The risk factors for breast cancer are:

- Increasing age
- Family history of breast cancer
- Cancer already in one breast
- Early start of menses (under 12 years) or late menopause (over 55 years)
- Late first pregnancy (over 35 years)
- High animal fat diet, high alcohol intake
- Breast feeding offers some protection against breast cancer.

The warning signs of breast cancer are:

- No symptoms (detected on mammogram or ultrasound)
- Lumps in the breast or underarm
- Puckering or dimpling of the skin of the breast
- Inverted nipples
- Abnormal discharge from the nipples
- Unusual rash or colour on the breast skin or nipples

Breast cancers are easily detected on mammograms and ultrasound examinations of the breasts and women are advised to do these once a year.

Simple breast self examination on a monthly basis can also help to detect lumps which maybe an early cancer. If there is a strong family history of breast cancer the woman is advised to enter a screening programme from the age of 35 years.

The fear is always that they may lose a breast with treatments but what is ironic is that doctors can actually save the breast if they are presented with early breast cancer.

The treatment for breast cancer involves surgery as the first line of treatment. The important message is if the cancer is found early, breast conserving surgery can be done saving the breast. Although even if mastectomy (removal of the whole breast) is required, it can now be combined with either immediate or delayed reconstruction. Reconstruction involves creating a 'new' breast from the patient's own tissue with or without an implant.

Reconstruction of the breast done immediately with surgery for the cancer is always psychologically so much better for the patient. It is also possible to re-construct the nipple and areolar complex, to achieve a good cosmetic result. Another innovation is "sentinel node biopsy", wherein only a few lymph glands from the underarm are removed to determine if the cancer has spread to them. If the lymph glands are clear, then total removal of the underarm

lymph glands can be avoided along with the complication of a swollen arm (lymphoedema). "Oncoplastic surgery" is also a new concept, where surgery is done to maintain the shape and size of the breast, and at the same time, removing the cancer with an adequate margin, thereby retaining cosmetically "normal" breasts for the patient as far as possible.

Other modalities of treatment include radiation therapy, chemotherapy, hormonal therapy and using newer targeted therapies.

Breast cancer is no more a "death sentence". It is imperative to get the necessary checks done so that these cancers can be detected early, so management becomes easier for the woman with better outcomes and ultimately life-saving.

Simple monthly self breast examination, if done routinely, can help the woman detect early changes to her breast and present early for treatments. This simple act of self examination may save your life. Screening for breast cancer should begin at the age of 40, with yearly mammograms and ultrasound examinations.

Mammograms and Ultrasounds are available at most hospitals and Pantai Hospital Kuala Lumpur now has a dedicated 'Breast Care Centre' that is a 'One-Stop Clinic' dealing with breast diseases and screening.

Remember EARLY DETECTION SAVES LIVES!

