
Cancer: Types, Causes, Effects and Treatment

Introduction

Cancer is identified as the uncontrolled division of abnormal cells in the body, there are over 100 types of cancer that the human body can get and this can happen in all parts of the body. How this works is that the body cells start to divide with no stopping and end up spreading to the surrounding body tissue, opposed to what normally happens where the body only produces the cells once it needs them.

There are many common types of cancer that is noticed around the world, one of this most common form being breast cancer has risen by 3.5 percent as opposed to 1999, this means that approximately one in eight women will have breast cancer. This increase is stranger because surely scientists have improved their knowledge and technology to help this. The reason this is still such a high and common cancer is due to the standard of living we now live in and modern technologies just cannot cope. It is found that having just an extra unit of wine (one glass has two units) can increase your chances of getting breast cancer by ten percent which is all and all not that great but with it already being such a common cancer it will take your chances from 23.45 % to 33.45 %. It has even been estimated that the extra unit of wine increase the number of breast cancer patients by an additional 11 patients out of every one thousand. Cancer is all about health, a woman (in this case) would reduce the possibility of breast cancer immensely though only keeping fit and eating healthy as your body stays on top and will be most likely be able to protect itself over a disease such as cancer but in some cases it can happen with even the healthiest fittest person, it's all about your body and the way it functions.

Our bodies are made up of millions of cells, inside each cell is a type of instruction manual called DNA, which has sections called genes. Genes are there to tell the cell how to behave like when to make new cells and when to die off to make space for new and healthier cells. When the cells divided, they make a copy of their genes, so that each new cell has the same instructions. Sometimes what happens is the instructions told be the cell could be affected or damaged causing a mutation. The cause of this mutation could be due to a chemical imbalance or environmental factor, it is even possible to have a hereditary risk for cancer. The healthy cells are always told when to grow and divide when it is the right time, with cancer cells they sometimes ignore the instructions told and continue to divide unchecked by the body- this is how cancer starts. In some cases, the cancer can remain dormant and not affect your body but in other cases cancer spreads to other parts of your body where they consume the resources of

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the bodies tissue and organs around it.

There are a number of different steps you could take to try get the cancer removed, we call this genomic testing. Genomic testing analyses the instructions of the cancer cell to help identify the mutations that could be the reasons why the cancer is growing and spreading. You then need to look at different treatment methods to take and find the one that best suits your type of cancer. Depending on the stage and seriousness of your cancer you will look into a few different options to take. For example; surgery, radiation, chemotherapy, targeted therapy or immune therapy. Surgery is straight forward and is usually done then the cancer is found early and is small enough to cut out. Radiation is used in small doses to slowly kill off all cancer cells in the particular part of the body. Chemotherapy is used to kill the cancer if it is rapid and divides too fast to be radiated on, this is if the cancer is spreading. Targeted therapy is drugs used to specifically target the mutation gene that causes the cancer to grow or spread, it blocks it out and stops the replication of that gene. Immune therapy is the least toxic and possibly most effective of them all, it uses the power of your own immune system to attack cancer cells and stop the growth and production of the cancer gene.

The following essay will give an information about cancer, its types, causes, and common treatments.

Common Causes of Cancer

Tobacco and Smoking

Tobacco and cigarettes are made from the dried tobacco leaves, as well as added flavourings to the tobacco leaves to make it taste better as well as make it more addictive. The tobacco smoke has been tested and has shown to include 70 chemicals that have a direct tie with cancer. Scientists call these chemicals carcinogens. A few examples of what chemicals are in the tobacco cigarettes are things like; hydrogen cyanide, lead, benzene and Arsenic to name a few. Smoking tobacco can also be radioactive because the tobacco leaves contain radioactive chemicals that they pick up from the soil. The intake of tobacco overtime can shorten a male's life from up to 12 years and with females up to 11 years.

Diet and Physical Activity

A person's physical activity and diet are two of the main factors that can have an influence on the risk of cancer. To reduce the risk of getting cancer one can make at least two thirds of your meals you eat fruit or vegetables and eat less than eighteen ounces of red meat (beef, pork or lamb) a week. You should also stay away from processed foods like bacon, sausage, hotdogs and deli meats; also try to have no more than one tablespoon of salt a day. All these

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things could lead to weight gain and result in you having a higher cancer risk. To keep your body healthy and fit you should be getting at least two and a half hours of exercise done every week.

Sun and Other Types of Radiation

Sun can cause your body to age quicker as well and make your skin hang and is a great cause of skin cancer. The sun releases energy waves and the waves that hit the planet are 53% infrared, 43% visible and 4% higher energy ultraviolet light; this ultraviolet light can affect your skin and cause DNA damage. Your body has something called melanin which helps protect your skin against different UV radiations. When UVB light hits your skin, it hits your skin directly causing DNA damage, your body tries to protect itself by now producing more melanin, although it takes a few days for the melanin to actually kick in. UVA is different and it passes through your skins deeper than UVB but your body reacts fast with this and produces melanin; it is the UVB that causes long lasting damage to your DNA, this could lead to cancer if one does not look after themselves. Some ways to protect yourself from the UV rays would be to stay inside or wear more clothes when in the sun and always – sunscreen.

Role of Mutations

A gene mutation is when there is an alteration in someone's DNA, thus making them different to the norm. Not all mutations are bad, sometimes something like blue eye is a mutation but it has no effect on the person and they are not disadvantaged in anyway. Some mutations are different in size for example they can affect just a single gene or could affect a large number of genes, this usually has an effect on the person's life expectancy resulting in an early death.

Random mistakes made by stem cells are responsible for two thirds of the mutations in cancer cells. Up to 5% of cancer mutations are inherited and 29% of cancer mutations are caused by unhealthy living such as smoking and lack of exercise as well as an unhealthy diet. The third cause of cancer is a major cause because it is a random mutation that takes place and can be dormant for years, this is the case for when older people randomly get diagnosed with cancer. It is often recommended to look back three generations to see if you could possibly be hiding a cancer gene and then from there the doctor will look into beginning a screening process to analyze the body to try detect any signs of early cancer cells developing. Currently mutation testing in cancer is just trial and error, when they use single genes and test them individually where they look for just one mutation at a time. The approach used also increases the time for accurate results and allows for guidance when it comes to the therapy process. NGS (next generation sequencing) has the ability to sequence several to literally thousands of genes from just one sample and then analyze these genes and determine the best therapy method.

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Traditional Treatments for Cancer/Effects

Surgery

Surgery is mostly used when the cancer is caught early and only found in one place. It is usually a safe method and is almost always successful unless it comes back and forms again. Depending on the patient's age and health, this is usually the best method of treatment. Pain is a huge side effect of cancer surgery it will luckily lesson after weeks and you can also receive pain medication. Another side effect after surgery would be fatigue, this could be things like loss of appetite and aesthesia.

Chemotherapy

This is when doctors prescribe drugs to treat the cancer, this is usually though to be a frightening method to most people but the drugs treat the cancer as well as help deal with the pain and discomfort you could be feeling. Chemotherapy can be used to kill the cancer in all different parts of your body it doesn't just target one part of your body. Chemotherapy is also a very painful procedure is can cause pain such as; headaches, muscle pain, stomach pain and nerve damage pain due to the drugs taken. Chemotherapy can also cause constipation, nausea and vomiting.

Radiation Therapy

Radiation therapy is the most common means of cancer treatment, it uses high-energy particles to focus on the cancerous part of the body and then kill it using gamma ray. How radiation works is it makes little breaks in the DNA cell and why this is done is because the cancer cells can no longer grow and eventually die out. Radiation therapy can cause skin problems like dryness, itchiness, blistering and peeling on the skin.

Targeted therapy

The targeted therapy is a newer kind of cancer treatment where they also use drugs or other types of substances that directly target and attack the cancer cells. This type of treatment is considered to be chemotherapy but the side effects are different to those of chemo. Not many people get side effects using this drug but the side effects do vary from person to person, but such things like skin problems can occur and this is not a sign of allergies. The skin problems can often occur because the targeted drugs attack the epidermal growth factor receptor protein and can sometimes turn off the signal for the skin cells to grow and this can have an effect on the moisture of the person's skin.

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Immunotherapy

This therapy uses certain parts of the person's immune system to fight the cancer, it is done by giving your immune system man-made components to fight the cancer; or they can simulate your own immune system to be strong and work harder and attack the cancer cells. Immunotherapy can sometimes cause flu-like symptoms, like muscle aches, shortness of breath, swelling of legs, weight gain. This is because your immune system is fighting the cancer and leaving you vulnerable to other types of diseases.

Success Rates for Different Treatments

Breast Cancer

It is estimated that over 268 600 women in just the United States are expected to be diagnosed with invasive breast cancer and 62 930 women with situ breast cancer. It is also estimated that a total of 42 260 deaths will occur due to breast cancer in this year.

Brain Cancer

This year it is estimated that a total of 23 820 diagnoses will occur in just the United States with primary cancerous tumours of the brain and spinal cord. The brain tumours are up to 80% of the primary tumours.

Lung Cancer

There are approximately 1.3 million deaths because of the result of lung cancer. With stage 5 lung cancer there is a less than 2% survival rate.

Immune System

Your immune system is your first line of defence against all types of pathogens. Cancer happens when there is a problem with your immune system, there would be no cancer if your immune system was working correctly; what happens is the immune system has completely missed the cancer so what they need to do is to basically put it start your immune system back up again in hopes it finds the cancer by finding it, fixing it and repairing the body back to working order. Cancer is seen as a disease of the immune system so what we need to focus on is things like a healthy diet and exercises and as little toxins as possible because we don't want to trigger the disease and give it fuel to run on. It is all about keeping our immune systems to the best of our ability in order to minimise the risk of cancer losing control and starting to divide.

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Conclusion

The future is looking up as we can now see affective and mostly harmless means of fighting cancer, this will however now extent people's life expectancy and that means an increase in population and the population demand, putting stress on other environmental factor that we rely on; for example, food like crops or meat. In the future we might all be healthy and live longer but how long until we start running out of a food group and then a population that depends on that food group will start to suffer.

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