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Cancer Vaccinations

Ashruta Patel

“Cancer is projected to become the leading cause of death worldwide in the year 2010,” with increases in the number of cancer incidences and death rates. There are many types of cancer that result from an uncontrollable growth of abnormal cells. A significant amount of research is conducted on cancer to help discover possible treatments for its prevention, one of which includes implementing the use of cancer vaccines. Cancer vaccinations could increase the immune system’s ability to protect the body from infections related to cancer-causing viruses. On the other hand, cancer vaccines have the potential to depress immune functions, risking the contraction of many more diseases.

Cancer vaccines can significantly decrease the occurrence of virus strains in the body by enhancing the function of the immune system. Vaccines are being considered for cancer treatments because

of their medicinal properties capable of boosting the immune system’s natural ability for protection against various foreign microbes, such as bacteria, fungi, parasites, or viruses. Once a cancer vaccine is injected, the immune system eliminates the substances from the body and develops a memory to protect the system from future threats posed by cancerous cells. White blood cells help the vaccine stimulate the immune system by protecting the body against any abnormal or damaged cells. Successful advances of such vaccines have been made, and implementing their use has led to a decreased number of patients suffering from certain cancer-causing virus strains.

There currently are two cancer preventative vaccines approved by the U.S. Food and Drug Administration (FDA) which have been responsible for cancer not developing in healthy people. There are

vaccines against the hepatitis B virus and types 16 and 18 human papillomavirus (HPV), which can cause liver and cervical cancer, respectively. Both of these vaccines consist of harmless viruses that “take a substance from a cancer cell’s surface and attach it to something the immune system already recognizes as foreign,” indirectly training the immune system to kill something. The increased use of these vaccines has led to positive outcomes because of their ability to stimulate the immune system. A study conducted with vaccinated women that were not infected with HPV-16/18 showed a high efficacy and proven ability to reduce the incidence of intraepithelial lesions. Not only does the HPV vaccine have the ability to significantly reduce cervical cancer rates, but it is also associated with other health benefits. Chronic infections can arise from one or both of the virus types, which are associated with cancers of the anus, penis, and oropharynx. If one vaccine can assist in a better immunity towards other cancers, continued tests and studies could provide further health advantages.

Additional research using experimental vaccinations for prostate cancer, melanoma (skin disease), lymphoma, and neuroblastoma (childhood tumor) all gave positive results over past treatments such as surgery, chemotherapy, or radiation. The side effects vary from patient to patient and the type of vaccine; however, most side effects reported include mild and limited inflammation. Thus, with accurate experimental designs, cancer vaccines can be promising for many other virus strains because science reports are readily available to back up improvements.

Cancer vaccines increase immune response against cancer cells already present within the body. Vaccines target viruses that cause the cancer rather than cancer cells themselves. Although cancer vaccines have made progress and improvements, additional research still needs to be devoted to the field to eliminate any uncertainties with recent or future discoveries.

Although, cancer vaccinations have been studied for several years, not many advances have been made in the past. Cancer comes from our own cells, making it difficult for the immune system to distinguish normal cells from cancer cells. Despite the discovery of two cancer vaccines, it is difficult to develop effective ones with numerous types of cancer existing. Some cancers “can escape detection by the immune system or weaken natural immune responses against cancer cells.” The immune system is the body’s only defense against disease, and a temporary immunity from the vaccine can make it vulnerable to developing other infections. The chemicals contained within vaccines can depress the immune system, the virus can depress immune function, and foreign DNA/RNA from tissues can depress immunity.

Vaccinations can reduce immunity in many ways. They contain immuno-suppressing chemicals and heavy metals which can alter the function of white blood cells and deplete the body of vital nutrients. Even though many studies have been conducted, it is difficult to consider vaccines as the best preventative medications

for cancer. The lengths of the benefits are unknown, and many vaccines for certain cancers need to be looked at individually for each patient. The vaccines become impractical in this case, and the costs of executing such practices are high.

There are numerous ways cancer can be prevented in a practical fashion. Instead of individually treating each cancer patient and putting money into drug companies for questionable vaccines, increasing education and outreach efforts could be more advantageous. For example, employing regular screening for cervical cancer and eradicating barriers for individuals to access all health services could lower cancer incidences knowing that third-world countries have a greater number of cancer rates. By simply improving lifestyle, cancer deaths can significantly decrease. Changes to lifestyle include not smoking, eating a diet rich in fruits and vegetables, protection from the sun’s rays, or practicing safe sex. For instance, the HPV infection can be reduced by practicing safe sex; however, a vaccine against it provides optimal protection. In contrast, the HPV vaccine has many implications related to its use.

The human papillomavirus is common in many women worldwide, yet the vaccine is not effective in women who already have the virus. The vaccine is predominantly used in North America, where cases are low, and an alternative method of prevention can be done by regular pap smears. Countries that require greater attention do not have the vaccine marketed because of the high cost for the series of vaccinations per person. Although there was a significant amount of time and effort designated to discover the vaccine, there is no proof that the Gardasil will prevent cervical cancer. Many of the experimental tests were performed on women whose ages did not realistically match with the average diagnosis age of cervical cancer. For this reason, Gardasil’s manufacturer includes “no claims to proof of cervical cancer prevention should be made” and “vaccine has not been tested for its own ability to cause cancer.” These statements signify that the vaccine does not have enough evidence to consider it efficient in the long run. Cancer vaccinations have many positive and negative outcomes associated with their use. Cancer is a growing cause of concern, and efforts to prevent or treat the illness should be continued. The discovery of vaccines has helped many individuals from contracting the virus, and further experiments may lead to a more efficient approach. Despite all the drawbacks involved with vaccinations, it appears more probable to continue testing scientific studies to maintain the progression of cancer research. Perhaps, persistent studies could lead to a universal vaccine capable of sufficing the most prevalent cancers.

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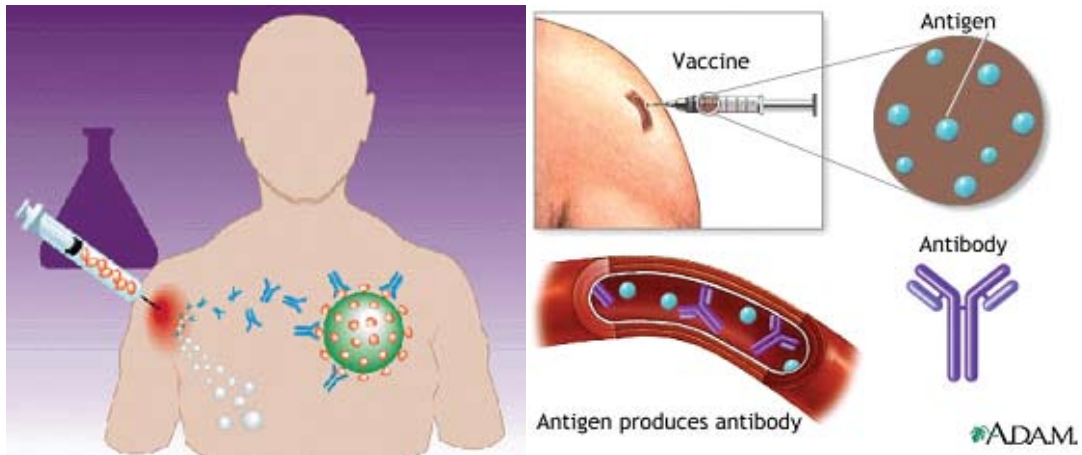


Figure 1 – the processes that occur when a vaccine is injected into the body

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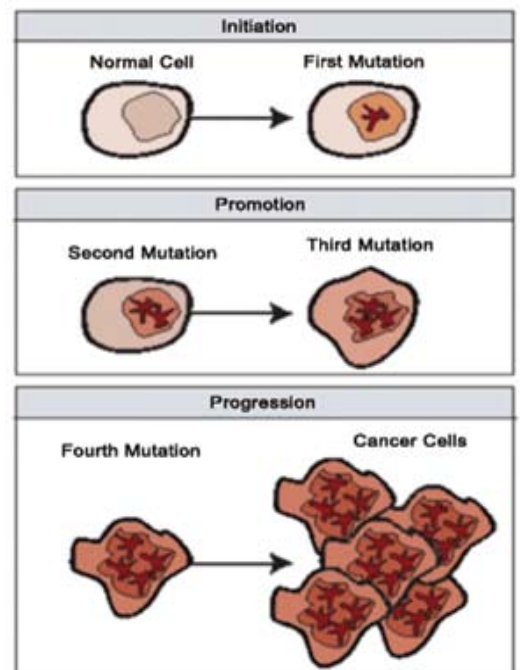


Figure 2 - mutation steps in cancer cells