

Latest Developments in the Treatments for Mesothelioma

by Michaella Hammersberg

In order to fully understand the developments of any new treatments for Mesothelioma we must first take a look at what Mesothelioma is and how it starts. If we do not look at the causes and the consequences of said causes we will not fully understand just exactly what the treatments hold for the future of this disease. For these reasons, stated above, that is where this document shall begin.

Mesothelioma is a cancer that is most commonly caused by the inhalation of asbestos fibers. These fibers, when breathed in, can enter the lungs and affect the outer coating of the lungs and the area surrounding it known as the Pleura. Once these fibers have reached the area of the pleura it causes what is called “Inflammatory Cytokines”, during which cells are told to enable fibers that will harm the DNA. Cells also begin to go through what is known as “cell survival” where instead of dying off like they are supposed to cells actually end up surviving this damage of the DNA and transfer themselves into tumor cells that contain Mesothelioma. Once contracted, unfortunately, Mesothelioma has proved to become an opponent that is not easily defeated. Currently tactics normally used to extract cancer, such as, chemotherapy, surgery and radiation therapy, have resulted in some disappointment. All the while the expectancy of survival of the Mesothelioma victim is at average twelve – eighteen months.

As you can see, there is a demand for change; demands for new clinical trials and unconventional treatments. As said by a well-known doctor in his field, Dr. Giovanni Gaudino of the Cancer Center Research of Hawaii:

“...since this cancer is so aggressive, since the incidence of this cancer is increasing . . . we have to go fast to find new therapies, effective therapies. And the only way to do that is to foster as much as possible clinical trials. I know that clinical trials . . . can be seen as an experiment on humans . . . And for individuals this could be hard to accept . . . to be part of an experiment. But at this point, clinical trials, I think, are the best way to try something new to get rid of this disease.”

New treatments are being looked into every day in order to help patients live longer with Mesothelioma and to ultimately rid the patient of Mesothelioma all together. Currently there is no cure for this cancer, but there are promising new developments being looked into as you read this document. We will discuss some of these treatments below, there are many more out there as well so keep in mind while reading what was said by Doctor David Sugarbaker about the developments in medical treatments for Mesothelioma.

“As I say to patients, when hope is part of the equation, anything is possible, I remain optimistic that we can, in the next decade, put together the right combination of patients and treatment to affect a cure, which is our holy grail.”

One of these new treatments is Photodynamic Therapy (PTD). This basically involves combining a drug called photosensitizer with particular wavelengths of light that enter the body and in the end, kills any cancer cells in the targeted vicinity. At this point you may be asking, "How exactly does PTD work?" Well, photosensitizer is a type of drug that makes something more sensitive to light, so this substance is injected into the patient's blood stream where it is absorbed by cells. Once absorbed by the cells it takes roughly twenty-four to seventy-two hours for the drug to leave any cells that are not inhabited by the cancer and then the patient is exposed to light. The light then begins a reaction that causes an active form of oxygen to destroy the cancerous cells that are targeted because of the photosensitizer that is left within them. There is also a second type of Photodynamic Therapy that is available is Extracorporeal Photopheresis (ECP) and this is actually done outside of the patient's body. It uses a machine to collect blood cells from the patient and then performs the same process before returning the blood cells back into the body.

Destroying the cancerous cells is not all that Photodynamic Therapy seems to do though; it also appears to be able to shrink and, or destroy cancerous tumors in two ways. One way being that within the tumor, blood vessels seem to become damaged and end up inhibiting the cancer from attaining the necessary nutrients it needs to survive. The second way it helps shrink cancerous tumors is by making the immune system realize that it needs to be attacking the tumor within the body. Doctors who practice Photodynamic Therapy are beginning to realize just how important this treatment is to help patients in the future; you can tell this by taking a look at a quote from Joseph S. Freidberg M.D. who is a top doctor in the field of Mesothelioma research.

"The overall survival for the RP plus PDT group was, for unclear reasons, superior to results reported in many surgical series, especially for a cohort with such advanced disease."

Another treatment available is called Immunotherapy. Immunotherapy has become an important part of helping treat many types of cancer and is a treatment where certain parts of your immune system are used to fight back against the cancer within your body. This involves a variety of treatments that work in different ways but are considered a part of Immunotherapy itself. Before continuing, you must understand Immunotherapy in its basic form. It can either stimulate your immune system and make it work harder for your body by attacking the cancerous cells or your immune system is given man-made elements such as immune system proteins that target specific things.

There are currently three main ways to use Immunotherapy, one of these being Monoclonal Antibodies. This type of Immunotherapy is one of the man-made immune system techniques that was mentioned above and can be very useful because it is designed to target specific parts of the cancerous cell. Another type is a Cancer Vaccine, which is a substance that is put into the human body to make the immune system respond against the cancer and can even help prevent some cancers. There is a more general way than the last two but it may still be able to create activity against cancerous cells, and that is known as Non-specific Immunotherapy. Immunotherapy is a very active area in the cancer research society and is continually being looked at and added to in order to make it better as well as produce more powerful treatments in the coming years. So, it seems, we can hope to see more coming from this area of treatment in the near future.

Gene Therapy is currently in use during clinical trials within the United States. It is another unique treatment that requires replacing a gene within the body's cells that is defective with a new gene in attempt to help your body fight the cancer and possibly even stop the disease. Being that it is currently used only in clinical trials within the states, researchers are still investigating several ways to apply this technique that are quite interesting.

Gene Therapy offers several ways to go about treatment that all involve replacing or fixing genes so that they become beneficial to your body instead of hindering it, we will cover these now: The first method is known as Replacing Mutated Genes and does just what you would expect it to by its name. This type of Gene Therapy works by replacing genes that no longer work as they should, or no longer work at all, with genes that may help treat certain diseases. While the next type of Gene Therapy works by either turning on or of depending on what the doctor wants the gene to accomplish while inside your body. When you turn off a gene it is because the gene has been promoting a disease. On the opposite end you want to turn on genes in order for them to refuse a disease. The final type of Gene Therapy we will cover is making diseased cells more evident to your immune system. Sometimes your immune system will not recognize cells that are carrying diseases; doctors can fix this by teaching your immune system how to correctly select cells that are a threat to you and your body.

The last type of treatment we will cover in this document has currently only been used as a treatment specifically for Mesothelioma only on mice in Japan. Although only tested on mice with Mesothelioma, as of now, Ashwagandha is an herbal remedy that has been used for more than three-thousand years for numerous medical purposes and is also one of the most powerful medicine plants that have been discovered. Ashwagandha is a plant that is in the nightshade family and parts of it, ranging from roots to leaves, are used in medicine. An extract of this plant's leaves mixed with Withaferin A (WA) seems to seek out cells that contain cancer as well as stop their growth. It does this by encouraging the activity of a protein that has been found to have properties about it that are anti-cancer.

In conclusion, as you can see, there are many new treatments out there and there are sure to be many more to come in the near future. With technology growing as fast as it is and medicine only getting better there is many a reasons to continue on with a positive outlook on a cure for Mesothelioma. As Joseph S. Freidberg M.D. has said:

“We’re bringing all the modalities to bear in fighting this disease. We are slowly nudging mesothelioma towards being more of a chronic disease, not a lethal one...Most people think it’s untreatable...but we don’t believe that’s the case”

I will leave you, the reader, with one final thought and that is because of all you have read, there is every bit of reason to keep looking for the treatment that will help you or a loved one and there is, and always will be, new reasons to continue to be hopeful about finding a cure. So please, Never give up!

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