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Biomedical Research on Pancreatic Cancer and My Life

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Ten years ago, when I was 4 years old, my parents told me that my grandmother, who was only 63, had been diagnosed with pancreatic cancer. After suffering horribly for 6 months, she died. In November of 2008, my grandmother's sister was also diagnosed with pancreatic cancer. She died 2 months later. Every year, 42,470 Americans are diagnosed with pancreatic cancer, and 35,240 of them die. The survival rate for pancreatic cancer is a mere 4.6% over 5 years. According to the Pancreatic Cancer Action Network, the 5-year survival rate has only increased 2% since 1975 and the number of new cases is expected to rise 55% by the year 2030. It is the 4th leading cause of cancer deaths in men and women in the United States.

The pancreas is a very important gland near the stomach that produces and delivers digestive enzymes to the intestine through the pancreatic duct. It also produces insulin, which regulates blood sugar. As with any organ, cancer can develop within it when some cells begin to grow uncontrollably. Symptoms of pancreatic cancer include weight loss, loss of appetite, depression, upper abdominal pain, and jaundice, or yellowing of skin and the whites of the eyes. Unfortunately, these symptoms are usually not seen until the cancer is advanced. Race, age, obesity, smoking, and a personal family history of pancreatic cancer or genetic syndromes are all risk factors for developing pancreatic cancer. Treatment includes surgery, radiation therapy, and chemotherapy. Surgery can often not be performed because the cancer has spread beyond the borders of the pancreas. Radiation therapy uses radiation to destroy cancer cells, and chemotherapy uses cytotoxic drugs to kill cancer cells.

Pancreatic cancer is one of the most aggressive and lethal cancers, because it is often not diagnosed until later stages. Symptoms often occur late, and there are no good screening tests to provide early detection of the disease. There are several areas of promising research involving pancreatic cancer using both humans and animals. The NIH website lists 782 current studies involving pancreatic cancer. In 2008, Bert Vogelstein, M.D., at Johns Hopkins School of Medicine completed the Pancreatic Cancer Genomes Project. They determined the sequence of 20,000 genes associated with 24 pancreatic cancers taken from real patients. The hope is that this will help further scientific research to develop both better tests for early detection using blood or other body fluids and new treatments. For example, K-ras is one of the commonly mutated genes seen with pancreatic cancer. Researchers are trying to develop treatments that target this gene.

Researchers are also using animal experiments to find new treatment options. The Seattle Cancer Care Alliance (SCCA) produced a pancreatic cancer in mice that is extremely similar to the disease in humans. SCCA is using this model to develop treatment for cancer in both early and late stages. Canadian researchers have been doing similar research. On January 20, 2010, Critical Outcome Technologies Inc. (COTI) reported positive results from animal experiments. They used animal model of human pancreatic cancer to test the effectiveness of a chemotherapy drug, COTI-2, as a single agent and in combination with another drug, Abraxane. Their study suggests that these drugs may help in treating pancreatic cancer.

Finally, another important area of research is developing better diagnostic tests for pancreatic cancer. Researchers recently developed a new test to help diagnose pancreatic cancer in earlier stages. For the first time, this test may indicate the presence of pancreatic cancer by detecting increased amounts of a protein in the urine. Hopefully, this will discover cancers before it is too advanced to be surgically removed. Other research to develop other simple tests for early detection is needed.

Pancreatic cancer is a very lethal disease that kills many Americans annually. Progress in developing new treatments and early detection has been limited. Hopefully continued research will bring new advancements that will help fight this deadly disease.

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Reflection

I chose to write about pancreatic cancer because both my grandmother and great aunt died as a result of it. This disease robbed me of my only living grandmother when I was only 4. I knew that pancreatic cancer was particularly aggressive and had a terrible prognosis. But I didn't realize how common it is and how many deaths it causes every year. It is I think it is sad that we don't have very many successful treatments for it or any way of detecting early enough to cure it. I think it is encouraging that we are moving forward with research into the causes and possible treatments for pancreatic cancer but think we need to make an even greater effort. Since pancreatic cancer can run in families, I am worried that other people in my family or I may someday have to deal with it. There are also thousands of other people that will also have to face it in their lives. Hopefully, our research will discover better tests to detect it earlier and find better treatments once it's been diagnosed.