

Proximal Bile Duct Cancer

I have chosen to research bile duct cancer. I am interested in this disease because it is one of the rarest forms of cancer. Only about 8,000 people in the United States are diagnosed with this disease each year. This is in contrast to the 3.3 million people who are diagnosed with a more common form of cancer, non-melanoma skin cancer. The research study that I chose, titled "Proximal Bile Duct Cancer: High Resectability Rate and 5-Year Survival" looked into a surgical approach to a cure for bile duct cancer that was made popular in 1974. This approach was the resection of the cancerous tumor(s). It was reported that resection did, in fact, improve the outcome.

The researchers reviewed the records of 40 patients who were diagnosed with bile duct cancer and underwent the surgery between 1968 and 1993. 11 of the patients underwent only tumor resection while 25 underwent both tumor and liver resection. The tumor locations were classified using the Bismuth-Corlett classification system. Five cases were type I lesions, four were type II, 25 were type III and 6 were type IV. The first step was to look for the growth using intraoperative ultrasound. This is important when trying to determine both location and size of the tumor. After determining location and size the surgery was done. Figure 2 within the research study shows a bile duct in Glissonian sheaths. It labels the Glissonian Sheath, the portal vein, the hepatic artery and the bile duct itself. This is to give an idea of where exactly these tumors would be located and how invasive the surgery could be. The surgery begins with the separation of the bile duct from the hepatic artery and the portal vein. Table 1 within the study lists the TNM classifications and stage grading. TNM stands for Primary Tumor, Regional Lymph Nodes, and Distant Metastasis. Figure 3 shows the type of surgical procedures according to tumor location, TNM classification, and staging. As for the results of the study, figure 4 is a graph that shows the overall actuarial survival for comparison. The percent of survival drops tremendously as the number of months increases. Figure 5 is the survival according to the type of surgery. Tumor resection levels out around 24 months. There is another drop at 48 months and then it begins to level out again at 27.3%. Liver transplantation levels out at 24 months with a 25% survival. It does not drop again. Hepatectomy drops many times until it levels out at 54 months with an extremely low percent survival. Finally, hepatectomy with vascular resection similarly levels out at 54 months with a low percent survival. Tumor resection seems to have the best percent survival as it does not go below 27.3%. Figure 6 shows the survival according to the location of the tumor. Type II tumors have the best percent survival at 25%. Type I comes next at 20%, followed by type IV at 16.7% and finally type III with 8%. This is proof that a cure is related to the location of the tumor, TNM classification, and staging. Hepatectomy improves survival even further.

This relates to cell biology because cancer is formed through the mutation of DNA within a cell. These mutations can turn on the genes that control cell growth, division, and death (oncogenes). They can also turn off tumor suppressor genes. These mutations can also be inherited from a parent and while they may not show in the parent, they can show in the offspring. However, gene mutations that form bile duct cancer happen during the course of one's life rather than through inheritance. Some changes in genes can be caused by things like inflammation while others are completely random and do not have a cause.

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