

# Liver cancer or 'hepatocellular carcinoma'

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Liver cancer or 'hepatocellular carcinoma' (or malignant hepatoma) is a malignant tumor that develops from the cells of the liver. The tumor may develop from liver as the primary site, or from spread from other sites in the body (secondary cancer). Primary cancer of the liver less frequently occurs compared to secondary cancer. So far, in the year 2007, about 19, 000 new cases of liver cancer (both primary and secondary cancers) have developed in the year, and about 16, 800 patients have died from the disorder (NCI, 2007). The type of treatment utilized and the outcome of the disorder depend on several factors including staging and spread of the cancer and the general health of the patient (and also other patient factors).

If the disorder is detected and treated in the early stages, the outcome is usually better. Some of the treatment methods recommended for liver cancer include surgery, chemotherapy, radiotherapy, liver transplantation, etc. As the current treatment available is rather ineffective in treating liver cancers, it is necessary that newer modalities be developed to treat the condition that would be both safe and effective. Some of the newer therapies that are being researched for liver cancers include chemotherapy, chemoembolization, immunotherapy and radiofrequency ablation (NCI, 2002).

Chemoembolization is a procedure characterized by mechanically or surgically obstructing the blood supply to the liver and then administering chemotherapeutic agents into the cancerous site so as to destroy them. As the level of chemotherapeutic agents is high at the site, they are more capable of destroying the tumor. Besides, the risk of side-effects are less, as the chances of the drug spreading in the blood is minimal.

Chemoembolization is usually performed to treat liver cancers that cannot be treated by surgery. However, those patients in whom the liver cancer was advanced, spread to other sites of the body, or developed associated renal failure, were excluded from the study. Out of 908 patients who were initially identified, 112 matched the criteria and were a part of the study. The drug frequently utilized is doxorubicin.

The initial results that were obtained through the study were promising. At present, no option is currently available to treat liver cancer. Liver transplantation may have a few limitations. Previously arterial embolization was utilized to treat liver cancer, but the survival rates in such cases could not be determined. In this trial, the 112 patients were divided into 3 groups, and one received arterial embolization only, the other received chemoembolization (arterial embolization and chemotherapy) and the third received conservative treatment. The results obtained through chemoembolization were amazing. 21 out of the 40 patients treated by this method died (survival rate was 47.5 %).

On the other hand, 25 out of the 35 patients treated through conservative methods died (survival rate 29 %) and 25 out of 37 (survival rate 32.5 %) died from receiving treatment through arterial embolization. However, the complete or long-term results could not be obtained through this trial, as the initial results demonstrated that chemoembolization results were very beneficial. The one-year survival rate for chemoembolization was about 82 % and the two year survival rate was about 63 %. The one-year survival rate for arterial embolization was 75 % and two-year survival rate was 50 %. The

one year survival rate for conservative treatment was 63 % and the two year survival rate was 27 % (NCI, 2002).

Radiofrequency ablation is frequently utilized to treat liver cancers that cannot be treated by surgery or other methods. In this technique, a specialized probe that emits certain waves, and generates heat in the tissues is utilized. The probe generates heat, and the cancerous cells are destroyed. This procedure is usually conducted under anesthesia (NCI, 2002).

Pancreas cancer or ' islet-cell cancer' is a malignant tumor that develops from the cells of the pancreas. It is a rare form of cancer, and in the US, in 2007, about 37, 000 new cases of pancreas cancer has developed and about 33, 370 individuals died from the disorder (NCI, 2002). Pancreatic cancer may be difficult to be diagnosed early and treated problem, as the pancreas is a tiny internal organ and usually the condition does not produce any signs or symptoms. Presently, surgery, radiotherapy and chemotherapy are utilized to treat pancreatic cancer. Immunotherapy is still undergoing research for its effectiveness and safety in treating pancreatic cancer.

A clinical trial was performed to determine the effectiveness of treating pancreas cancer with gemcitabine and chemoradiation. The effectiveness of 5-fluoracil (an chemotherapeutic agent) and radiotherapy was compared to gemcitabine, along with 5-fluoracil and radiotherapy. One out of every five pancreatic tumors can be treated by surgery. Besides, the outcome following surgery for pancreatic cancers is very poor. The tumor can recur, thus reducing the survival rates. Presently, in the US, chemoradiation is frequently utilized along with surgery in treating pancreatic cancers. 5-  
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Flurouracil is frequently utilized in the chemoradiation. As the chances of recurrences are still high with this modality, researchers have suggesting a clinical trial in which an additional chemotherapeutic agent is utilized along with the standard therapy.

Gemcitabine was the drug selected to be utilized along with 5-flurouracil and radiotherapy, following surgery. The main aim of the study was to demonstrate an improved outcome or a better survival rate following use of this combination in treating pancreas cancer. About 442 individuals were selected for this trial and were divided into 2 groups. The individuals of both groups had undergo surgery to remove the tumor and had to also undergo chemoradiation later. In the first group, gemcitabine was administered before and after the chemoradiation, whereas in the second group, 5-Flurouracil was administered before and after the surgery. Tumors that developed from the head and the tail of the pancreas were included in the study. Gemcitabine used to treat pancreatic head tumors along with chemoradiation was had a survival period of about 20.6 months.

On the other hand, about 16.9 months was the survival period of those who received 5-Flurouracil. The there year survival rate in those who received gemcitabine was about 32 %, and the three year survival rate in those who received 5-Flurouracil was about 21 %. However, the risk of side-effects was higher in individuals who received gemcitabine. These cells tended to destroy the blood cells. Supportive drugs seemed to be more beneficial in treating gemcitabine-induced depression in the blood cell counts. The study demonstrated that gemcitabine was more effective in treating tumors arising from the head of the pancreas after surgery, than 5-Flurouracil (NCI, 2006).

Another study was conducted to determine the beneficial effects of gemcitabine along surgery, and surgery alone. The study population (consisting of 368 individuals) was divided into two groups, the first group was administered gemcitabine following surgery, and the second group was treated with surgery alone. The study demonstrated that recurrence rates of the tumor treated with gemcitabine and surgery was much better than those treated by surgery itself. Recurrence occurred after 13.4 months in those treated with gemcitabine and after 6.9 months in those treated with surgery alone (NCI, 2007).

#### References:

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