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Hong Kong Sanatorium & Hospital
Latest Study of Selective Internal Radiation Therapy Improves Treatment Outcome

(8 January 2013 - Hong Kong) Hong Kong Sanatorium & Hospital (HKSH) constantly strives to provide the best medical treatment and patient care by participating in pioneer medical researches. Since 2006, the Hospital has published over 200 research papers in academic journals covering a wide range of specialties and topics, including nuclear medicine, PET/MRI technology, diagnostic and interventional radiology, radiotherapy, pathology, clinical oncology, cardiology and ophthalmology. "Our Comprehensive Oncology Centre (COC) has taken part in the latest study of selective internal radiation therapy (SIRT). It helps facilitating the development of cancer treatment, which could ultimately be translated into more and better treatment options. We sincerely hope that through the active participation in medical research and the improvement of existing treatment techniques, the overall medical standard can be enhanced in Hong Kong," said Dr. Walton Li, Medical Superintendent of HKSH.

Liver cancer has the third highest mortality rate amongst all cancer types in Hong Kong. The high mortality rate is due to the obscure symptoms of liver cancer. Another reason is that surgery may not be available to patients with poor liver conditions. A local study revealed that these inoperable liver cancer patients can receive selective internal radiation therapy (SIRT). By placing radioactive microspheres in small vessels of the tumour and shrinking the size of the tumour, this improves treatment outcome of patients and lights hope to advanced stage liver cancer patients.

Difficulty in Treating Inoperable Liver Cancer

Dr. Leung Wai Tong, Thomas, Associate Director of Comprehensive Oncology Centre at HKSH, pointed out that the difficulty in treating liver cancer lies in the inability to eliminate cancer cells, "The liver is the largest organ in the body. It is responsible for breaking down carbohydrates and fat for the body to absorb as energy. The liver produces protein, secrets bile for digestion and breaks down toxins. There is no pain nerve in the liver and symptoms such as loss of appetite, weight loss, upper abdominal and right shoulder pain are not obvious.

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By the time the patient is diagnosed with liver cancer, the tumour is likely to have spread. At this stage, cancer cells are harder to eliminate."

As Dr. Leung explained, "Treatments for liver cancer patients include surgery, medication, radiotherapy, radiofrequency ablation and intra-arterial treatment, etc. If the condition permits, we will attempt to eliminate cancer cells through surgery. However, if the size of the tumour is too large, or the tumour is invading adjacent organ vessels or portal veins, a large portion of liver tissue has to be removed. This increases the risk of surgery. Since the cancer cells cannot be completely removed, the chance of recurrence is also higher. In fact, around 80% of liver cancer patients are ineligible for tumour resection due to severe liver cirrhosis or extensive disease.[1]"

Poor Liver Function Limits the Efficacy of Medication and External Radiotherapy

Dr. Leung indicated that the characteristics of the liver cancer also lead to limitations in non-surgical treatments, "Liver cancer cells are drug resistant. Medication is not too effective, especially for advanced stage patients. Patients with poor liver functions also have a poor ability to endure medications and external radiotherapy. The affected area of medications and external radiotherapy is relatively large so more normal cells are affected. Liver cancer patients who are frail may suffer from side effects from the treatments."

Localised SIRT Treatment Causes Little Damage to Normal Cells

Many cancer patients are not suitable for external radiotherapy due to its side effects and sequelae. Yet, selective internal radiation therapy (SIRT) causes less damage to normal cells, and its efficacy is more direct, "SIRT uses millions of microspheres which contain radioactive isotopes, Yttrium 90. The size of the microspheres is 20 to 60 micron or an equivalent to 1/3 of the diameter of human hair. Doctors will open a small incision at the groin to deliver microspheres to the liver through a micro catheter. The microspheres are then carried through blood streams to the tumour. They accumulate inside the tumour and release radiation."

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Dr. Leung explained that the hepatic artery is the main blood source of tumour and hyper vascularization is common in liver cancer. To eliminate the tumour, it is better to start from the hepatic artery, "The size of the microsphere is similar to the tumour vein, so microspheres can accumulate in the tumour blood vessels through the hepatic artery and release radiation without affecting too much normal tissues. SIRT is suitable for patients who have inoperable liver cancer, no or minimal extra hepatic disease, no portal vein or branch portal vein thrombus, >2 tumour to normal tissue ratio (T/N radio), ≤15% lung shunting from TcMAA scan, and good liver functions."

Latest SIRT Local Study Shows Low Complication Rate

Dr. Leung has analyzed recent data of SIRT which revealed its efficacy to liver cancer patients, "The study took place at Hong Kong Sanatorium and Hospital from 2003 to 2012. There were 133 patients who completed SIRT, including 85 hepatocellular carcinoma (HCC) patients and 45 metastatic liver cancer patients. After two months of treatment, 36% of the patients' CT scan images showed a reduction of tumour size. The alpha-fetoprotein (AFP) level which indicates signs of recurrence has also dropped."

"Generally, the possible complications of SIRT are radiation hepatitis, radiation gastritis and radiation pneumonitis. However, the complication rate of the patients in this study is less than 5%." Dr. Leung added.

Overall Survival Rate Raised, Lighting Hope for Liver Cancer Patients

With regards to survival rate, Dr. Leung has compared this local study to other statistics overseas, "In our study, the 1-year survival rate of HCC and metastatic liver cancer patients are 31% and 32% respectively. In three other SIRT overseas studies, the average median survival of patients who received SIRT are 13.5[2], 16[3] and 16.4[4] months. By contrast, a British study conducted in 2008, illustrated the mean survival of 302 patients who received placebo treatment is just 7.9 months[5]."

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SIRT Patient cases: Shrank Tumour Size, Decreased Tumour Activity and Metabolism

Dr. Leung shared 3 cases of patients who had undergone SIRT, "The first patient, an 88 year-old male, had a tumour size of about 50.4mm. After two months of treatment, his CT scan image revealed that the size of the tumour shrank. His AFP level was also lowered."

"The second male patient is also 88 years old. He is an inoperable HCC patient and a Hepatitis B Virus (HBV) carrier. Before the SIRT, his AFP level was 304,500 ng/ml. The patient started his SIRT treatment on the 28 August in 2012. After eight weeks of treatment, the PET scan image showed a decreased tumour activity."

"The third patient, a 74 year-old man, suffered abdominal pain before being diagnosed with liver cancer. He also happens to be a HBV carrier and liver cirrhosis patient. In October 2011, he had liver resection for segment IV tumour. However, his HCC liver cancer recurred less than a year later, in September 2012. He then received SIRT that same month. Since then, his PET scan images depicted a decrease in the tumour's metabolism and a controlled tumour growth."

- End -

About Hong Kong Sanatorium & Hospital

Hong Kong Sanatorium & Hospital is one of the leading private hospitals in Hong Kong. With the motto "Quality in Service Excellence in Care", the Hospital is committed to serving the public as well as promoting medical education and research.

Comprehensive Oncology Centre

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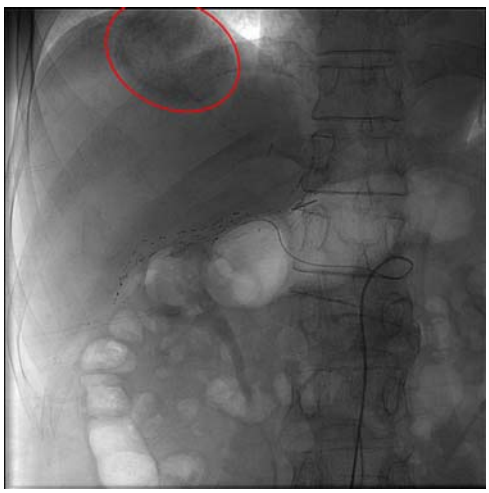
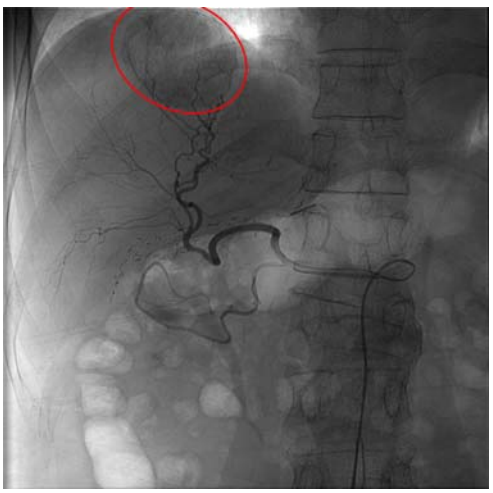
Photos

1. "Doctor will open a small incision at the groin to deliver microspheres to the liver through a micro catheter. The microspheres are then carried through blood streams to the tumour. They accumulate inside the tumour and release radiation." Dr. Thomas Leung explained. He also demonstrated the procedure of delivering microspheres to the liver through a micro catheter.

2. Radioactive isotopes Yttrium 90 are delivered into the hepatic arteries through a micro catheter and transported directly to the tumour through blood streams. (Tumour in red circle)





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