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新聞稿 PRESS RELEASE

Major Advances in Liver Cancer Treatment

The Joint Hepatoma Clinic of the Chinese University of Hong Kong at Prince of Wales Hospital has successfully developed two different methods of internal irradiation to treat inoperable liver cancer and thus prolong the lives of liver cancer patients.

Doctors from The Chinese University of Hong Kong at the Prince of Wales Hospital announced the above major advances in the treatment of liver cancer at a recent symposium sponsored by Glaxo (HK) Ltd. The symposium on "The Update on Management of Hepatocellular Carcinoma" was attended by over 450 local doctors. "We had such an over-whelming response" said Professor Arthur Li Kwok Cheung, Chairman of the Department of Surgery "that many doctors requested that we should share our advances with the general public so that people are better informed in order that they may benefit from access to these novel treatments."

Liver cancer is the second commonest cause of male cancer death in Hong Kong and is extremely prevalent in South Eastern China. Over 80% of patients with hepatocellular carcinoma are hepatitis B carriers and cirrhosis is common. Although surgical resection gives the best chance of cure, because symptoms are usually minimal until late, nine out of ten patients are inoperable at the time of presentation. On average these patients will die within three months of diagnosis. This grave prognosis is due to lack of effective treatment until the breakthrough at the Prince of Wales Hospital.

When the Prince of Wales Hospital opened in 1984, a Joint Hepatoma Clinic was set up to introduce the concept of multidisciplinary approach in the management of liver cancer. This new idea is still unique in Hong Kong. The special clinic is run by a team of experienced doctors consisting of hepatologists, oncologists, radiologists and surgeons.

Patients referred to this clinic are immediately seen on the nearest Friday. In the morning, an ultrasound of the liver is performed. The same afternoon after joint consultation with all the specialists, a plan of investigations and best treatment procedures for each patient is then decided upon. Because of the association of liver cancer with infection from hepatitis B virus, family members of patients who may also be exposed to such infections are interviewed by an experienced nurse and blood tests screening are carried out. Those relatives who are at high risk are closely followed upon with regular investigations to detect any development of early cancer.

Surgical resection remains the treatment of choice for operable liver cancer as it offers the only hope of a cure. Because of the rapid growth of the tumour, suitable patients are operated upon once they finished their protocol of investigations which are designed to give maximum information within the shortest time. New investigative procedures like lipiodol ultrasound guided biopsy was developed by the doctors at the Prince of Wales Hopoital to help in making appropriate clinical decisions in difficult and doubtful situations.

The risks of resectional surgery for liver cancer are considerable because these patients are cirrhotics with questionable liver functions and associated bleeding tendency. Professor Li and his colleagues demonstrated the use of various techniques they have developed together with new equipment which have rendered the operation much safer.

The prognosis for patients with inoperable liver cancer is extremely poor. Systemic and regional chemotherapy on the whole has little impact. They may alleviate symptoms but they do not prolong survival. Other techniques like blocking the blood supply, embolization, immunotherapy and alcohol injection have all been used to palliate inoperable cancers. However they are unsuitable to treat large tumours that are commonly seen in Hong Kong. Moreover they are unable to significantly prolong survival. With such a lack of effective treatment for inoperable liver cancers many doctors do not refer their patients for therapy so as to avoid the inherent side effects which may increase the patients' sufferings.

Liver tumours will respond to radiotherapy if the radiation doses are adequately large. However external radiotherapy has little place to play in the treatment of hepatocellular carcinoma because it is limited by the maximum radiation dose that can be delivered to the cancer without injuring the surrounding normal liver tissue at the same time. The specialists at the Prince of Wales Hospital with a research grant from the University Polytechnic Grants Committee have now developed a new technique in which radioactive isotopes are targeted and concentrated specifically in the liver tumour. Professor Li explained that it is similar to the smart missiles seen in the Gulf War. The missiles are directed to the tumour in the liver and the warhead will then destroy it while the surrounding normal liver tissue is spared.

There are 2 types of targeting substances (missiles) that are currently used at the Prince of Wales Hospital, namely Yttrium-90-microspheres and Lipiodol-I-131. After injecting either one of the substances into the feeding artery of the tumour, they will go preferentially and stay with the tumour. A ratio of tumour to normal liver uptake of 4 to 1 and even up to 10 to 1 can be achieved. With the respective radioisotopes (warheads) that are attached to the targeting substance, the tumour will receive a high dose of irradiation which can then kill it . At the same time, the normal liver will only receive a relatively small dose of irradiation which is kept within safety limits. Such selective internal irradiation of liver tumour is a breakthrough and cannot be achieved by conventional external beam irradiation. The initial result is encouraging in terms of regression of tumour, dramatic decrease in serum level of alpha-foetal protein (a specific tumour marker of primary liver cancer) and most important, a prolongation of survival. "With further refinement in our treatment", said Professor Li "even better results can be achieved".

The team at the Chinese University of Hong Kong is now recognised as the leading international experts in this field.

November 14, 1991

Attachment: Photos on the new treatment techniques