



Press Release

April 15, 2010

HKU Conducts First Human Clinical Trial on Heat Activated Chemotherapy in Cancer: A Novel Technology of Chemotherapy for Cancers

The University of Hong Kong Li Ka Shing Faculty of Medicine and Queen Mary Hospital have partnered with the National Cancer Institute of the United States to conduct a clinical study on liver cancer patients treated with thermosensitive liposomal-encapsulated doxorubicin combined with radiofrequency ablation (RFA) recently. Twenty four liver cancer patients (primary, n=9; secondary, n=15) have been treated with this novel technology of chemotherapy globally. Thermosensitive liposomal-encapsulated doxorubicin can be safely administered systemically in combination with RFA. The toxicity was limited and manageable.

Heat activated chemotherapy for liver cancer

Thermosensitive liposome-encapsulated chemotherapy is a recently developed novel technology in which chemotherapy drug is encapsulated in a layer of heat-sensitive liposome which dissolves at a temperature greater than 42°C and release the drug. This allows delivery of the drug at high dose locally to a tumor heated but minimize expose of other organs to the drug. This is a “smart target” drug delivery mechanism that allows more effective chemotherapy at the tumor but reduce the systemic toxicity of the chemotherapy.

In conjunction with the National Cancer Institute of the United States, the Department of Surgery of Queen Mary Hospital performed the first-ever human study on the use of heat activated chemotherapy in cancer patients. Twenty four patients from the two institutions with primary or secondary liver cancers were treated with radiofrequency ablation in combination with thermosensitive liposomal doxorubicin in a phase 1 trial. Radiofrequency ablation is a thermal ablation technique aimed to kill cancer cells with heat but incomplete eradication of cancer cells in the peripheral zone and tumor recurrence remain a major problem. By combination with thermosensitive liposomal doxorubicin, high concentration of doxorubicin, a chemotherapy drug commonly used for liver cancer, can be delivered to the tumor to kill cancer cells not subjected to lethal temperature.

Conclusions

The study showed that this new technology of heat activated chemotherapy is effective in enhancing ablation of the tumor and is well-tolerated even in cirrhotic patients without any major life-threatening toxicity, which is common when conventional chemotherapy is used to treat liver cancer patients. A large scale international phase 3 trial involving 70 sites in Hong Kong, Mainland China, Taiwan, Korea, Japan, Thailand, Malaysia, Philippines, USA, Canada and Italy is on-going, aiming to recruit totally 600 patients. Queen Mary Hospital serves as the principal investigator of the trial in Asia-Pacific region leading 57 sites in participating in the study. The

technology is also undergoing phase 1/2 trial in breast cancer and has the potential in treating other cancer types.

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新聞稿

二零一零年四月十五日

港大進行全球首個熱激化化療治療癌症臨床研究 - 癌症治療嶄新技術

香港大學李嘉誠醫學院及瑪麗醫院聯同美國國家癌症研究所最近完成全球首個熱激化化療治療癌症病人臨床研究，研究利用熱敏感微脂體輸送阿霉素結合射頻消融治療肝癌，全球共有 24 名肝癌病人參與研究（原發性，9 例；繼發性，15 例）。以這種嶄新方式施以阿霉素進行化療的安全性很高，可以將化療藥集中於腫瘤中，副作用亦較以靜脈注射傳統化療藥（現為常規注射方法）少及輕微。

熱激化微脂體輸送阿霉素治療肝癌

利用熱敏感微脂體將化療藥帶到腫瘤是一種嶄新治癌技術。在本研究中，阿霉素會被一種熱敏感脂肪微粒包覆，當這些熱敏感脂肪微粒被加熱後，便會將阿霉素釋放。治療是透過射頻消融技術，將腫瘤加熱到攝氏 42 度，以致阿霉素直接釋放到肝腫瘤內部。由於腫瘤外的其他組織未被加熱，故阿霉素只會釋放於／輸送到腫瘤內部。以這種“目標為本”方式進行化療，可減少其他器官接觸到阿霉素，而治療所引起的副作用亦較少及輕微，更可大大提高化療藥於腫瘤內的濃度，增加治療效果。

是項研究共有 24 位來自這兩所研究所的肝癌病人參與。射頻消融術是透過熱消融技術來殺死癌細胞，但腫瘤細胞的殘活仍然是射頻消融的最大隱憂。理論上，射頻消融可以結合其他治療以達至更佳的效果。其中，射頻消融結合熱活化微脂體輸送阿霉素是一項可行的方案。通過脂肪微粒包覆阿霉素，阿霉素的濃度將可以大大提高；當進行射頻消融時，阿霉素將直接釋放於／輸送到肝腫瘤內部，同時可殺死任何尚未被射頻消融摧毀的腫瘤細胞。

結論

本研究証實微脂體輸送阿霉素能有效提高射頻消融治療肝癌效果，而且較傳統以靜脈注射阿霉素治療肝癌所引起的副作用少及輕微，即使對於普遍會出現副作用的肝硬化的病人來說，在治療後亦沒有出現任何嚴重反應。一項大型國際性第三期微脂體輸送阿霉素結合射頻消融治療肝癌臨床研究現已展開，全球共有 70 多個中心參

與，包括香港、中國內地、台灣、韓國、日本、泰國、馬來西亞、菲律賓、美國、加拿大和意大利，共招募了 600 名肝癌患者。香港大學聯同瑪麗醫院將作為亞太地區的領導研究中心，帶領亞太地區 57 個中心參與這項研究。與此同時，一項第一/二期微脂體輸送阿霉素治療乳腺癌亦在進行，而相信熱激化化療應可用在治療其他癌症。

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http://web3.hku.hk/facmed/hkumed/news_list.php