

Glycomic Monitoring of HCC, fibrosis and cirrhosis in Chinese patients infected with hepatitis B - " Hepatitis B" - BL/02/C42

(Geographic) study area (country/region) : China/Ghent

Context and objectives

Most serum N-linked glycoproteins are synthesized by the liver and by B-lymphocytes. Any changes in serum total N-glycans could reflect alteration of liver or B-lymphocyte physiology. Our previous studies in Chinese liver fibrotic group and HCC patients infected with HBV showed alterations in N-glycan profilings. This project is aimed at studying glycomics during progress of liver fibrosis and HCC and has major objectives:

To evaluate the usefulness of glycomics biomarker for diagnosis of liver fibrosis in follow up the drug treatment in Chinese patients with fibrosis or cirrhosis.

To evaluate the usefulness of our N-glycomics HCC marker for early detection of cancer; to evaluate the usefulness of glycomics marker in a follow-up the treatment with Chinese antitumor herbs and, or receiving chemotherapy.

To evaluate the usefulness of glycomics for pre-screening Chinese antifibrotic herbs and antitumor herbs (TCMs) in a rodent model and a HCC rodent model by comparing them to existing Western drugs.

Methodology

- The lab in Shanghai (EHBH), China, is responsible for the collection of the blood serum samples from the Chinese patients with fibrosis, cirrhosis or HCC, and the set-up of an extensive clinical data set for the subjects.
- The lab in Ghent University is responsible for the glycan profiling analysis of the blood serum samples from Chinese patients.
- An appropriate analysis of the clinical, biochemical data and N-glycome data is performed in the group in Ghent University.
- Glycomics study in rodent HCC model induced by diethylnitrosamine is carried out in China and Ghent.

Results

- We found that in HBV patients, like in HCV patients, several serum N-glycans were altered during development of liver fibrosis. We further confirmed glycome HCC biomarker in a large cohort of Chinese HCC patients.
- After the treatment in the fibrotic liver patients or HCC, the glycome biomarkers are reversed, respectively.
- The glycosylation alteration during liver cancer progress was observed in the DENA induced HCC mouse and rat. We propose a GlycoTest model using the serum glycan markers to monitor the progression of cirrhosis and HCC in the DENA induced HCC-rat.

Products and services

Peer reviewed papers:

(1) Hong-lian Gui, Chun-fang Gao, Hui Wang, Xue-en Liu, Qing Xie, Sylviane Dewaele, Ling Wang, Hui Zhuang, Roland Contreras, Claude Libert and Cuiying Chen. Altered serum N-glycomics in chronic hepatitis B patients. *Liver International*, 30(2), 259 – 267, 2010.

(2) Meng Fang, Sylviane Dewaele, Peter Stärkel, Yun-peng Zhao, Yue-ming Chen, Xin Ji, Ming Luo, Bao-mu Sun, Valerie Vanhooren, Yves Horsmans, Claude Libert, Chun-fang Gao and Cuiying Chitty Chen. N-glycome biomarker for DENA-induced hepatocellular carcinoma in rat. Revised to *Mol. Cancer*.

(3) Fang, M., Zhao, Y.P., Zhou, F.G., Lu, L.G., Qi, P., Wang, H., Zhou, K., Sun, S.H., Chen, C.Y. & Gao, C.F. N-glycan based models improve diagnostic efficacies in HBV-related hepatocellular carcinoma. *Int. J. Cancer* 127(1), 148-159, 2010

Abstracts:

(1) Chitty Chen. Glycome Biomarker to Detect Early Stage. BIT's 2nd Annual Congress and Expo of Molecular Diagnostics (CEMD-2009), November 19-21, 2009, Beijing, China.

(2) Chitty Chen. sugar test: Blood non-invasive diagnosis for liver diseases. The Second Ditan International Conference on Infectious Diseases (2nd DICID), 14 –17 November 2008, Beijing, China

(3) Fan M, et al. Chen C. &Gao C. N-glycome Profiling Improves Diagnostic Efficacies in HBV-related Hepatocellular Carcinoma. 44th Annual Meeting of the European Association for the Study of the Liver (EASL). 22-26 April 2009. Copenhagen Denmark.

(4) Cuiying Chitty Chen, Meng Fang, Chun-fang Gao, Peter Stärkel, Yves Horsmans and Claude Libert. Serum N-glycome biomarker for monitoring progression of DEN-induced hepatocellular carcinoma. The 21st Meeting of the European Association for Cancer Research (ERCA21), 26-29 June, 2010, Oslo, Norway.

Execution

Period: 01.12.2007—31.11.2009

Laboratory/network:

Belgium:

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Discipline

Medicine
Cancer
Liver studies