

## Standardization of perioperative management on hepato-biliary-pancreatic surgery

Jianjun Gao<sup>1,2</sup>, Peipei Song<sup>1</sup>, Sumihito Tamura<sup>1</sup>, Kiyoshi Hasegawa<sup>1</sup>, Yasuhiko Sugawara<sup>1</sup>, Norihiro Kokudo<sup>1</sup>, Kanji Uchida<sup>3</sup>, Ryo Orii<sup>3</sup>, Fanghua Qi<sup>1,4</sup>, Jiahong Dong<sup>5,\*</sup>, Wei Tang<sup>1,\*</sup>

<sup>1</sup> Department of Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan;

<sup>2</sup> China-Japan Cooperation Center for Drug Discovery & Screening, Shandong University, Ji'nan, China;

<sup>3</sup> Department of Anesthesiology, Faculty of Medicine, The University of Tokyo, Tokyo, Japan;

<sup>4</sup> Provincial Hospital Affiliated to Shandong University, Ji'nan, China;

<sup>5</sup> Hepato-Biliary-Pancreatic Surgery Division, The General Hospital of PLA, Beijing, China.

**ABSTRACT: Japan-China Joint Medical Workshop (2012) on standardization of perioperative management on hepato-biliary-pancreatic surgery was held by the Center for Medical Standards Research, IRCA-BSSA Group in Japan on April 15-16, 2012. Experts in the fields of surgery, anesthesia, pharmacy, and public health from 21 health institutions from Japan and China presented their research achievements and shared their medical experience of perioperative management on hepato-biliary-pancreatic surgery, which should facilitate building of guidelines for hepatocellular carcinoma and be expected to promote standardized management of liver cancer in Asia.**

**Keywords:** Guideline, standardized management, liver surgery, liver transplantation

From advocacy of evidence-based medicine to establishment of clinical pathways, the concept of "standardized management of care" has garnered substantial attention globally and has been fully implemented in several countries. Clinical practices prove that standardized management of care contributes to normalized medical practices, optimized health care programs, decreased medical risks, increased efficiency of medical services, and reduced health care costs (1,2). In this context, the Center for Medical Standards Research (CMSR) was established by the IRCA-BSSA Group in Japan in 2011, aiming to promote the advancement of evidence-based medicine, standardization

of medical care, and systematic cataloging of research findings in related disciplines. Many research programs on standardized management of diseases have been promoted by CMSR since the establishment, especially for the research between Japan and China. Concerning liver cancer, the Japan-China Joint Team for Medical Research and Cooperation on Hepatocellular Carcinoma was established in 2011 with the support of CMSR. The team carried out a retrospective study and analyzed the published guidelines for hepatocellular carcinoma (HCC) worldwide, and clarified principles of evidence-, resource-, and population-based guidelines that should be given a great deal of attention in constructing prospective guidelines for HCC, especially for China and other Asian countries (3,4).

As part of the standardized management of liver cancer, the Japan-China Joint Team for Medical Research and Cooperation on Hepato-Biliary-Pancreatic Surgery was also established with the support of CMSR. In order to promote information exchange between experts from Japan and China, the Japan-China Joint Medical Workshop (2012) on Standardization of Perioperative Management on Hepato-Biliary-Pancreatic Surgery was held by CMSR at the University of Tokyo, Tokyo, Japan on April 15-16, 2012. Experts in the fields of surgery, anesthesia, pharmacy, and public health from 21 health institutions from Japan and China presented their research achievements and shared their medical experience of perioperative management on hepato-biliary-pancreatic surgery.

In this workshop, experts from the Chinese PLA General Hospital, Peking Union Medical College Hospital, Peking University People's Hospital, and other institutes introduced the current Chinese research status and their experience on the topics of protection of remnant liver function, perioperative management for abdominal surgery, and so on. Specifically, the experts' research and experience on perioperative management of safe liver resection from the University

\*Address correspondence to:

The "Japan-China Joint Team for Medical Research and Cooperation"

Dr. Jiahong Dong (E-mail: dongjh301@163.com) and Dr. Wei Tang (E-mail: tang-sur@h.u-tokyo.ac.jp)

of Tokyo Hospital (UTH) was impressive since the short-term mortality after hepatectomy in this hospital is nearly 0 which is far less than that in representative hospitals of other countries (ranges: approximate 4-6%) (5-11). Their research and experience are shared as the following. First, in preparation for safe hepatectomy, they thought that evaluation of liver function, volumetric analysis, and keeping sufficient functional liver volume were thought to be important, and asserted that *i*) the indocyanine green (ICG) test is a key method to estimate liver function (12-14); *ii*) volumetric analysis using preoperative simulation is useful (15-17), and *iii*) portal vein embolization (PVE) (16,18,19) and venous reconstruction can contribute to securing sufficient functional liver volume (20-22). Second, in intra-operative management, control of central vein pressure (CVP), transection technique, and inflow occlusion should be paid close attention to. They proposed that *i*) low CVP should be achieved by some techniques such as infusion restriction, reducing TV (23), and blood salvage (24); *ii*) clamp crushing remains the first choice (25-28); and *iii*) intermittent inflow occlusion is safe and useful (29,30). Third, in post-operative management, prevention of infection including proper placement and management of drainage tubes (31) administration of antibiotics, control of ascites including exact control of water balance and proper administration of diuretics should be considered (32). The experience of UTH on management of safe hepatectomy may provide a valuable reference for standardization of perioperative management of liver surgery (11).

Experts from UTH also introduced their research and experience in living donor liver transplantation (LDLT). They emphasized that most important in LDLT is safety of the living donor with good quality of life after donation (33-35). To assure this, a careful protocol based evaluation process under a multidisciplinary approach (36,37) and a tailored graft selection algorithm (38) have been established. As for the recipients, three important points in pre-operative examination have been stressed. First is exclusion of pulmonary hypertension. Specifically, when right ventricular systolic pressure (RVSP) is evaluated to be more than 50 mmHg by ultrasound imaging (US), the pressure must be measured directly. If the pressure is actually more than 50 mmHg, the patient should be contraindicated for LDLT. Second is exclusion of infectious disease that may seriously compromise survival. Bacterial, viral, and fungal checks are necessary for successful LDLT. Third is the check for esophageal varices and treatment, and endoscopic ligation if necessary. In postoperative care, four major complications including infection, acute cellular rejection (ACR), biliary stenosis, and thrombosis occur with rates of approximately 40%, 30%, 10%, and 8%, respectively. Close monitoring and early intervention is mandatory in every aspect for better survival of the recipient. In case of suspected infectious complications, treatment with

prophylactic administration of antibiotics, and antiviral or antifungal drugs may be justified (39-41). Of note is the novel approach with plasma (1 → 3)  $\beta$ -D-glucan measurement for preemptive treatment of fungal diseases that may often become fatal once becoming symptomatic (41). Meticulous adjustment of immunosuppressive drug levels (42), regularly performed US to confirm intact blood flow, in combination with adequate anticoagulation may further contribute to early sound recovery of the recipient. The experience of UTH on LDLT may also contribute to the standardization of liver surgery.

In conclusion, the Japan-China Joint Medical Workshop (2012) discussed the hot topic of standardization of perioperative management on hepato-biliary-pancreatic surgery, with information exchange from Japan and China. The experts' research and experience presented in this workshop should facilitate building of guidelines. Furthermore, these achievements are expected to promote standardized management of liver cancer in Asia.

#### Acknowledgements

This work was supported by the Center for Medical Standards Research, IRCA-BSSA Group. We are grateful to Dr. Takeaki Ishizawa, Dr. Yosuke Inoue, and Dr. Atsushi Shimizu (Department of Surgery, Graduate School of Medicine, The University of Tokyo) for their support of this conference.

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(Received April 23, 2012)