

immunostaining (> 10 IgG4-positive plasma cells/HPF) reported in the literature vary widely in pancreatic tissue (41-88%) as well as in extrapancreatic tissue (18-88%). The sensitivity of positive IgG4 immunostaining may depend on: 1) the disease activity and stage; 2) the size of the acquired tissue; and 3) the proportion of type 2 AIP. The occasional presence of positive tissue IgG4 has been reported to be as much as 12% in pancreatobiliary malignancies. It is worth emphasizing that the result of positive IgG4 immunostaining in isolation does not necessarily qualify for the diagnosis of AIP. The diagnosis of AIP requires cautious correlation with the histopathological features in the sample, as well as with the other cardinal features of AIP.

Patients with suspected AIP and a continued need for differentiation from pancreatic cancer due to indeterminate CT imaging occasionally cannot be diagnosed even after a thorough investigation including imaging, serology, the previously mentioned endoscopic examinations, and biopsies. In these very select cases with diagnostic uncertainty, steroid responsiveness is a reliable test to confirm the diagnosis of AIP and differentiate it from pancreatic cancer. A steroid trial should not be used as a substitute for a thorough search for etiology and its use should be restricted to patients with considerable collateral evidence for AIP and only after negative investigations for pancreatobiliary malignancies. The investigations for exclusion of pancreatobiliary malignancies should include EUS (with FNA in cases of depicted pancreatobiliary mass/lymph node) and ERCP-guided endobiliary biopsy in cases of biliary stricture. Repeat sampling (mostly EUS-FNA) may be warranted in patients with continued suspicion of pancreatobiliary malignancies, despite indeterminate or negative findings at initial EUS-FNA or ERCP-guided biopsy.

Cutting may not be a crime for now. Inappropriate pancreatic/hepatobiliary resections are still performed for AIP/IgG4-SC in a very limited number of patients, and that steroids are still given to limited patients with pancreatic adenocarcinoma/cholangiocarcinoma. Getting close to

zero error rate means multidisciplinary investigation, prudence, and willingness always to question the evidence. It is important for surgeons to be aware of the cardinal features of AIP/IgG4-SC.

Special Lecture 2

Quantitative evaluation of segmental liver reserve with use of gadoxetate disodium-enhanced MR imaging

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Quantitative evaluation of liver function is important not only for monitoring of that function, but also for preoperative assessment of the liver reserve.

The Plasma Disappearance Rate of Indocyanine Green (ICG- PDR) has been regarded as a valuable tool for the quantitative assessment of liver function, because it is removed from the circulation exclusively by the liver. However a reliable method for the quantitative anatomically based evaluation of segmental liver function has not been established to date, to our knowledge.

The Future Remnant Liver Volume (FRLV) and a quantitative liver function test, such as the ICG clearance test, have been reported to be significant predictors of postoperative liver failure and mortality. However, with volumetry, precise estimation of the segmental liver reserve could be impossible because the heterogeneity of the liver function could not be taken into account.

Gadoxetate disodium is a paramagnetic hepatobiliary contrast agent that can combine the features of extracellular agents with those of a hepatocellular contrast agent. The same transporting mechanisms (i.e. the Organic Anion Transporting Polypeptides, OATPs) are considered to be responsible for uptake

of gadoxetate disodium and ICG in hepatocytes; therefore, there is a possibility that gadoxetate disodium-enhanced MR imaging could be the basis of a useful method for quantitative estimation of post-operative liver failure similar to ICG clearance but with anatomic delineation of hepatic function.

Recently, several studies reported that signal intensity of the liver in gadoxetate disodium-enhanced MR imaging could be useful in prediction of Posthepatectomy Liver Failure (PHLF). However, most of these methods lack appropriate correction for FRLV or the effect of contrast media existing in extracellular fluid space of the liver. On the other hand, Remnant Hepatocellular Uptake Index (rHUI) is a newly developed index for segmental liver reserve with appropriate correction for FRLV and the effect of contrast media existing in extracellular fluid space. rHUI can be obtained by following equation.

$$\text{rHUI} = \text{rV}(\text{rL20}/\text{S20} - 1)$$

where, rV is volume of FRLV, rL20 and S20 are signal intensities of the future remnant liver and the spleen on MR images at 20 min after intravenous administration of gadoxetate disodium, respectively.

In this lecture, 1) the pharmacokinetics of gadoxetate disodium, 2) the correlation of gadoxetate disodium-enhanced MR imaging and ICG clearance test, and 3) the prediction of PHLF with use of rHUI will be described with some case presentations from our clinical experiences.

Symposium 2. (Technical Review) Liver Transplantation

1. In Adult right liver LDLT

1) To do or not to do procure MHV considering donor and recipient safety

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1. In Adult right liver LDLT

2) Art in bench surgery for HV reconstruction

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Outflow obstructions are some of the most serious complications after liver transplantation, and they occur more frequently with living donor liver transplantation (LDLT) versus deceased donor liver transplantation because the anastomosis of the hepatic veins to the IVC is much narrower and more complicated than the anastomosis of the inferior vena cava (IVC) to the IVC, and the liver graft is enlarged because of regeneration after transplantation. Transplant surgeons have tried to prevent outflow obstructions in hepatic vein anastomoses by many procedures.

In the initial experience of LDLT, small-for-size problem after LDLT frequently occurred because there was no consideration of this venous outflow. These days, most of transplant surgeons do their bench work to solve the hepatic venous outflow problem with hepatic vein (HV) reconstruction. Various techniques were developed to reconstruct the middle hepatic vein (MHV) and to make out-