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Panel discussion (1):
Inoperable liver cancer and its management
Moderators: Michio ODAKA and Mikio NISHIOKA

Multidisciplinary treatment for intractable hepatocellular carcinoma, especially for far advanced or severely poor risk patient
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One hundred and thirty four patients with hepatocellular carcinoma was admitted to our clinic for the past 8 years. 109 cases of them was associated with liver cirrhosis. 87 cases had surgical treatment including 62 hepatic resection, but only 19 (30.6%) was curative resections. Many cases were intractable because of their far advanced spreading or severely impaired hepatic function. Therefore, multidisciplinary treatment are required for these intractable cases. At the first, it is important to evaluate the functional reserve of the liver on hepatic surgery in cirrhotic patients. We had established useful criteria of hepatic resection based on the functional reserve of the liver, evaluated by multivariate analyses of various liver function tests. Furthermore, preoperative estimation of ICGRmax of the remnant liver, calculated by effective liver volume rate measured by using emission CT, is a valuable indicator for choice of operative procedure. In 6 patients, limited hepatectomy was performed with plugging of Oxycel containing Mitomycin C or Adriamycin with some effect. Transcatheter arterial embolization or injection of ethanol into tumors under ultrasonic guiding were performed in the other 26 patients and 3 patients, respectively. In one case with far advanced cancer, massive hepatic resections of both right hepatic lobectomy and partial resection of the lateral segment, followed by portal infusion of anticancer agents through the umbilical vein, were carried out with good palliation. Radiation therapy was effective in far advanced cases, with one long survival of 3 years and 2 months.

Devices for increasing resectability in hepatoma patients
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We have experienced 102 hepatocellular carcinoma (hepatoma) among 182 patients undergoing liver resection since 1980. Conditions leading to difficulty of hepatic resection are conveniently classified into two groups from the standpoints of functional and technical problems. The former are preoperatively represented by hyperbilirubinemia, ascites and "linear" typed OGTT pattern. Intraoperative estimation of hepatic functional reserve was performed by measurement of cytochrome a (+a3) contents in mitochondria. When cyt. a (+a3) is over 1.5 × 10^-10 mol/mg protein, hepatic resection should be avoided, and limited resection when in 1.3-1.5 × 10^-10 mol/mg protein. The above evaluation of hepatic function has brought out an improvement of postoperative death with less than 3%. Technically, to the advanced hepatoma cases, transcatheter arterial embolization (TAE) was performed and postoperative TAE to non-curative operation. Hepatic arterial ligation was added to segmentectomy in hepatoma patients with daughter lesions and reduced hepatic functional reserve due to cirrhosis. Following rare cases will be shown. A patient
with cirrhosis and arterial aneurysm due to SAG could safely undergo trisegmentectomy by its reconstruction with saphena magna vein. Another case with portal tumor thrombosis invaded into the opposite portal vein could undergo trisegmentectomy after withdrawal of the tumor thrombosis by preoperative TAE.

**Radiation therapy and transcatheter arterial embolization (TAE) for inoperable hepatocellular carcinoma**

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On inoperable cases of hepatocellular cancer we actively carried radiation therapy and hepatic arterial embolization (TAE). Hepatic resection was performed on 64 out of 105 cases with hepatocellular carcinoma treated up to September, 1984. The applicability of hepatic resection was based on the standards of ICGR15, partial resection of the liver was carried out in less than 50% and lobectomy was carried in less than 20% of the cases. Based on the degree of advancement of the cancer, cases were considered to be inoperable when cancer was seen in both lobes or when tumor emboli were seen either in the portal vein or the main branch of the hepatic vein.

However, in the case where only several tumors were observed in both lobes and it was considered to be a multicentric cancer, it was our policy to perform resection and 2 out of 3 of these cases have survived for more than two years. On inoperable cases, we performed therapy by TAE as a general rule, and the one year survival rate was 30%.

When we studied the histological effects of TAE in resected cases, it was found to be ineffective for portal vein tumor emboli and carcinomas located in the vicinity of the tumor capsule. In 9 cases complicated by tumor emboli we conducted radiotherapy. We conducted TAE and palliative resection of the main tumor and on tumors that proved resistant to TAE we conducted radiation therapy. There were two cases of biliary duct emboli, 5 cases of portal vein, and 2 cases of hepatic vein emboli. In three cases we observed that the tumor emboli disappeared after radiotherapy and in two of these cases radical resection became possible. On inspection of the excised specimens we confirmed that complete necrosis had taken place. It is anticipated that radiotherapy will prove its utility in treating cases complicated by tumor emboli. Also radiotherapy was even found to be effective in treating cases of hypovascular tumors and cases in which it was impossible to perform TAE because of the condition of the arteries.

**Treatment of hepatocellular carcinoma (HCC) with esophageal varices and HCC developed after esophageal transection (Sugiura procedure)**

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In six cases of HCC with esophageal varices of F3, F4 or red color sign (+)1), liver resection was performed in combination with blocking operation (Sugiura procedure)2) for the treatment of varices as a rule. In a different series of 12 cases of HCC where hepatic resection was impossible, blocking operation for the treatment of varices combined with hepatic arterial embolization3) and other non-operative procedure for the treatment of HCC was performed with satisfactory prognoses. In cases of hepatic disorders of advanced stage, endoscopic sclerotherapy4) has been used as the first choice of therapy. Twenty-two (22) cases of HCC developed after Sugiura procedure were studied, and duration of time elapsed before HCC had been detected was found to be 51 postoperative months on the average. In 19 cases (86%), AFP values showed 20 ng/ml or more during the course at one stage or another: these were considered as a high risk group for the development of HCC. In five cases, hepatic resection was performed, and in 11 cases, hepatic arterial embolization was performed.