



:
: 53 5835
11 가
8 cisplatin , 가 3
cisplatin .
, 1 CT
:
cisplatin 1
cisplatin 1
CT 8 1
, 6 가 5 , 3 , 1
가 가 . cisplatin 3 1
가 가 , 1
11 1 가 가 가 가 .

가
가
(1-5).
가
(6-12).

가
,
1995 5 1999 9
5835
(13).

11 38
82 (57.4) ,
B , Child -

Pugh A가 10 , B가 1 .
(alpha - fetoprotein) 492.1 ng/ml , CT
5 ,
6 . 11 4 ,
7 (3.6) ,
5 - Fr (Rosch Hepatic;
Cook, Bloomington, U.S.A.) ,
(coaxial technique) 3 - Fr (Microferret; Cook,
Bloomington, U.S.A.)
Kg cisplatin (cis - diamminedichloroplatinum; Dong - A,
Seoul, Korea) 2 mg 15 - 20 .
3 - Fr
(Lipiodol : Andre Guerbet, Aulnay - Sous - Bois, France)
cisplatin 1 1 20 cc , (Gelfoam
: Gelatine sponge. Upjohn, Kalamazoo, U.S.A.)
. 11 3 , 2
6
가 8 cisplatin
, 가 3
cisplatin
, 1 CT
, 1 59 (27)
, 9
cisplatin
cisplatin
1 2
(Table).
가 8
5 , 3

Table. Summary of Case Material

Case	Age(yr.)/ Sex	Embolic Material*	Post-TACE† Angiogram*	Follow-up CT§	Follow-up tumor size¶ (day)	Pain (day)	GB Stone
1.	43/M	L+G	-	compact	NC	1	+
2.	64/M	L+G	-	partial	NC	20	+
3.	38/M	L+G	-	compact	NC	2	-
4.	60/M	L+G	-	compact	D	5	-
5.	73/M	L+G	-	compact	NC	1	-
6.	46/M	L+G	+	partial	I	1	-
7.	64/M	L+G	-	partial	NC	1	+
8.	57/M	L+G	-	compact	NC	3	-
9.	82/M	L	+	compact	D	1	-
10.	46/M	L	-	partial	I	1	-
11.	52/M	L	-	wash-out	NC	1	-

* L, Lipiodol + cisplatin; L + G: Lipiodol + cisplatin + Gelfoam

† TACE, Transcatheter Arterial Chemoembolization

‡ remnant tumor staining

§ lipiodol uptake in follow-up CT

¶ NC, no change; I, increase; D, decrease

가
. 가 8 3
, 가 3 1
1 CT cisplatin
8 5
(Fig.
1), 3
(Fig. 2), 6 가 , 1
가 1 가
cisplatin
3 1 가 1
가 , 1
가 가 (Table).
1 20 (3.4)
cisplatin
1 20
CT
, 가 가 (Fig. 2).

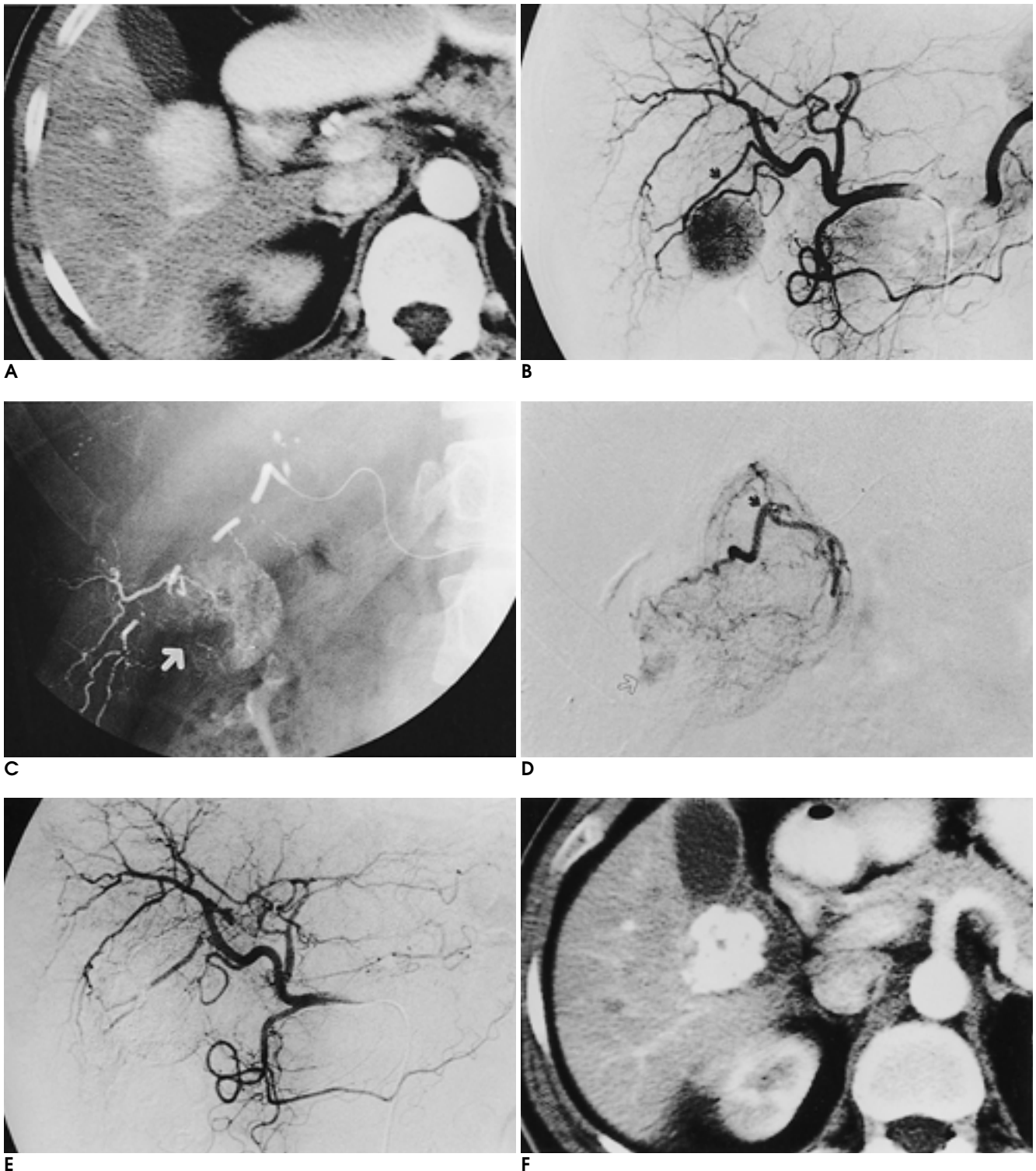


Fig. 1. A. Enhanced CT performed prior to TACE reveals a enhancing mass lesion just posterior to gall bladder in the segment 6.
 B. Hepatic arteriogram shows a round tumor staining supplied by right posterior inferior segmental hepatic artery (arrow) in the segment 6.
 C. Lipiodol is selectively concentrated in the tumor during Lipiodol-TACE, but no Lipiodol uptake (arrow) is seen in inferolateral portion of the tumor.
 D. Cystic arteriogram (arrow) shows tumor staining (open arrow) at inferolateral portion of the tumor.
 E. Hepatic arteriogram obtained immediately after Lipiodol-Gelfoam TACE shows no residual tumor staining.
 F. 1-month follow-up CT shows compact Lipiodol uptake and no enhancing lesion.

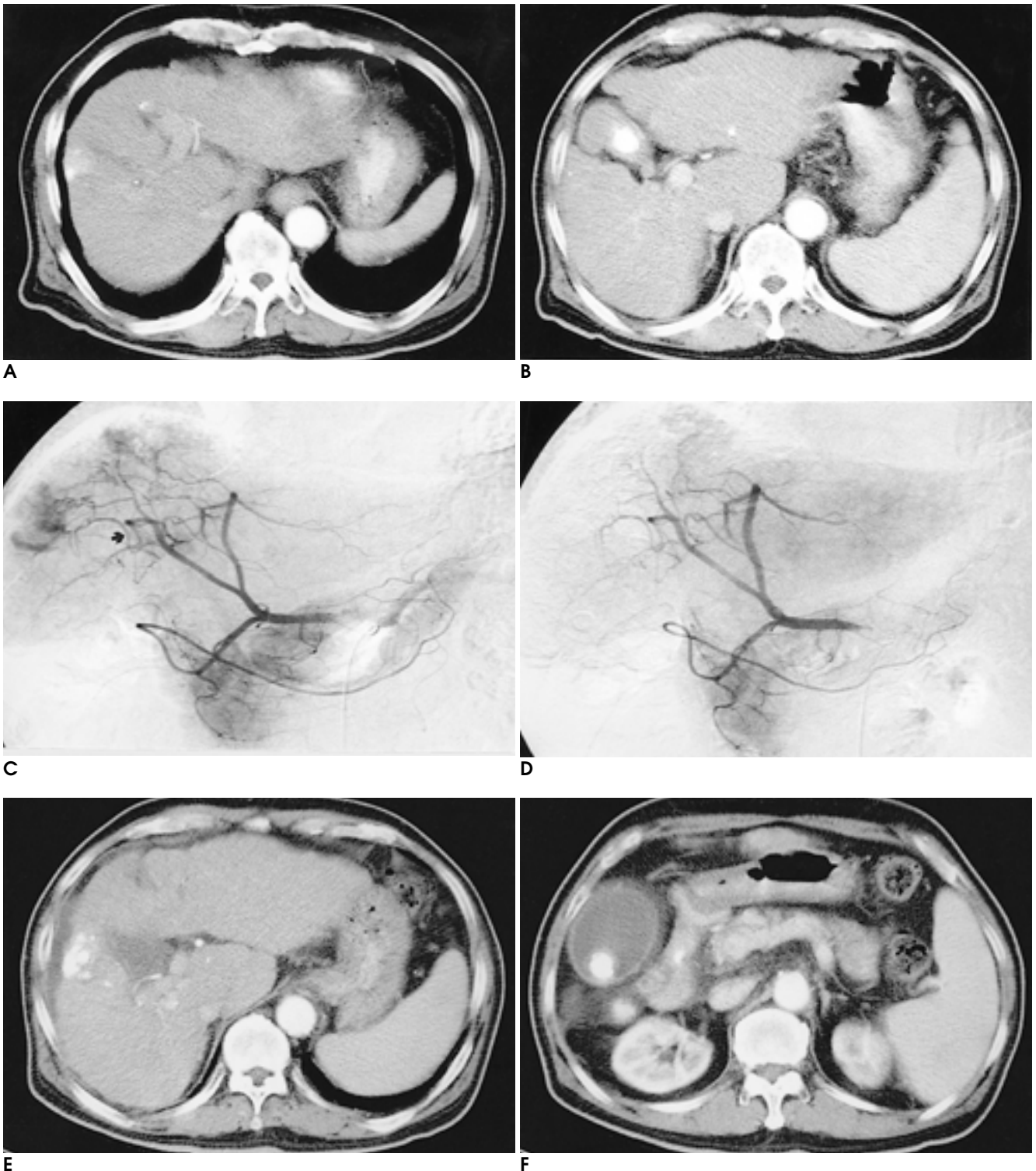


Fig. 2. A. Enhanced CT performed prior to TACE reveals a enhancing mass lesion around Lipiodol uptake in segment 5.
 B. There is a gall stone in gall bladder.
 C. Hepatic arteriogram shows a tumor staining supplied by right anterior inferior segmental hepatic artery and cystic artery (arrow).
 D. Hepatic arteriogram obtained immediately after Lipiodol - Gelfoam TACE shows no residual tumor staining.
 E. 1-month follow-up CT shows partial Lipiodol uptake and enhancing lesion around Lipiodol uptake mass.
 F. 1-month follow-up CT shows findings of cholecystitis (gall bladder distension, wall thickening, and pericholecystic fat infiltration).

가

(6).

가

가

14% 90%

(6, 9, 10).

가

가

CT

가 11

(9). caerulein

(14). Hirota

(13).

가

가

(superficial branch) (deep branch)

가 80%,19%,1%

(accessory right hepatic artery)

가 45%, 12%, 10%

가

가 (15,

16).

가

가

9% (1/11)

가

가

1. Yamada R, Sato M, Kayabata M, et al. Hepatic artery embolization in 120 patients with unresectable hepatoma. *Radiology* 1983;148:397-401
2. Nakamura H, Tashiro S, Hiraoka T, et al. Studies on anticancer treatment with an oily anticancer drug injected into the ligated hepatic artery for liver cancer. *Cancer* 1983;52:2193-2200
3. Uchida H, Ohishi H, Matuo N, et al. Transcatheter hepatic segmental arterial embolization using Lipiodol mixed with an anticancer drug and gelfoam particles for hepatocellular carcinoma. *Cardiovasc Interv Radiol* 1990;13:140-145
4. Park JH, Han JK, Chung JW, Han MC. Transcatheter arterial chemoembolization of hepatocellular carcinoma: SNUH experience. *Reg Cancer Treat* 1992;1-2:30-32
5. . 1992;35(1):36-42
6. . 1994;31(5):839-845
7. Yamashita Y, Torashima M, Oguni T, et al. Liver parenchymal changes after transcatheter arterial embolization therapy for hepatoma : CT evaluation. *Abdom Imaging* 1993;18:352-356
8. Doppman JL, Gorton M, Vermess M. The risk of hepatic artery embolization in the presence of obstructive jaundice. *Radiology* 1982;143:37-43
9. Kuroda C, Iwasaki M, Tanaka T, et al. Gallbladder infarction following hepatic transcatheter arterial embolization. *Radiology* 1983;149:85-89
10. Takayasu K, Moriyama N, Muramatsu Y, et al. Gallbladder infarction after hepatic artery embolization. *AJR Am J Roentgenol* 1985;144:135-138

11. Takayasu K, Moriyama N, Muramatsu Y, et al. Splenic infarction, a complication of transcatheter hepatic arterial embolization for liver malignancies. *Radiology* 1984;151:371-375
12. Makuuchi M, Sukigara M, Mori T, et al. Bile duct necrosis: complication of transcatheter hepatic arterial embolization. *Radiology* 1985;156:331-334
13. Hirota S, Matsumoto S, Fukuda T, et al. Solitary hepatocellular carcinoma fed by the cystic artery: Limitation of transcatheter arterial embolization. *Cardiovasc Intervent Radiol* 1999;22:206-209
14. Akamatsu K, Miyauchi S, Ohshima K, et al. Alleviation of gallbladder complications by treatment of hepatic arterial embolization with caerulein. *Cancer Chemother Pharmacol* 1989;23: 59-64
15. Kadir S. *Atlas of normal and variant angiographic anatomy*. Philadelphia : Saunders, 1991:300
16. Michels NA. *Blood supply and anatomy of the upper abdominal organs*. Philadelphia: Lippincott, 1955:139-142, 155-165

J Korean Radiol Soc 2001;44:37 - 42

Safety of Superselective Transcatheter Arterial Chemoembolization through Cystic Artery for Treatment of Hepatocellular Carcinoma¹

Jae Ho Byun, M.D., Hyun-Ki Yoon, M.D., Ho-Young Song, M.D., Deok Hee Lee, M.D.,
Jae Cheol Hwang, M.D., Bong Soo Kim, M.D., Jae Won Kim, M.D., Kyu-Bo Sung, M.D.

¹Department of Diagnostic Radiology, Asan Medical Center, University of Ulsan College of Medicine

Purpose: To report on the safety and efficacy of superselective transcatheter arterial chemoembolization(TACE) of tumor feeding branches originating from the cystic artery for the treatment of hepatocellular carcinoma(HCC).

Materials and Methods: From, May 1995 to, September 1999, eleven HCC patients aged between 38 and 82 (mean, 57.4) years with tumor-feeding branches originating from the cystic artery underwent TACE. In eight, for whom superselection of these branches was possible, TACE was done with the use of Gelfoam and a mixture of Lipiodol and cisplatin, while for three, for whom superselection was impossible, a mixture of Lipiodol and cisplatin only was used. Immediately after TACE, remnant tumor staining was angiographically evaluated, and tumor response was determined by follow-up CT at one month. After procedure, the development of cholecystitis was assessed clinically.

Results: Post-TACE angiography showed remnant tumor staining in one patient who underwent embolization with Gelfoam and the mixture of Lipiodol and cisplatin, and in one for whom the mixture of Lipiodol & cisplatin only was used. Among the eight for whom Gelfoam and the mixture of Lipiodol and cisplatin was used, one-month follow-up CT showed compact Lipiodol uptake in five, partial Lipiodol uptake in three, no change in tumor size in six, increased tumor size in one, and decreased tumor size in one. Among the three for whom the mixture of Lipiodol and cisplatin only was used, one-month follow-up CT showed neither Lipiodol uptake nor change in tumor size in one patient, partial Lipiodol uptake and increased tumor size in one, and compact Lipiodol uptake and decreased tumor size in one. Cholecystitis developed in only one patient who underwent embolization with Gelfoam and the mixture of Lipiodol and cisplatin, but was cured by conservative treatment.

Conclusion: Superselective TACE of tumor feeding branches originating from the cystic artery seems to be a safe and effective method for the treatment of hepatocellular carcinoma.

Index words : Liver neoplasms, angiography
Liver neoplasms, chemotherapeutic embolization
Hepatic arteries, therapeutic embolization

Address reprint requests to : Kyu-Bo Sung, M.D., Department of Diagnostic Radiology, Asan Medical Center,
University of Ulsan College of Medicine, 388-1, Poongnap-dong, Songpa-gu, Seoul 138-736, Korea.
Tel. 82-2-2224-4400 Fax. 82-2-476-4719