

: (percutaneous microwave coagulation therapy, PMCT)
 (transcatheter arterial chemoembolization, TACE)

: 19 25 15:4
 31 - 72 (55.4) . Child 16 Class A , 3 Class
 B . 1.2 - 10.0 cm(3.4 cm)
 . TACE 1 4 - 138 PMCT . PMCT
 14 - G 25 cm, 1.6 mm
 60 W 45 - 60 . PMCT 2 - 6
 1 - 3 , 1 - 10 7 -
 29 (12.3) CT ,
 : 25 CT
 18 (72.0%) 7 (28.0%) . 4 cm 85.7%
 4 cm (100%) (p=0.003).
 18 8 ,
 . 5 가
 19 12 (63.2%) PMCT AST/ALT가
 . PMCT (8), (5), (2),
 (3), (1) ,
 : PMCT TACE 4 cm

가 , (transcatheter arterial chemoembolization, TACE),
 (percutaneous ethanol injection, PEIT)
 1990 (1, 2).
 가
 가 (3).
 20 - 30% . TACE
 가 , (percutaneous microwave coagulation therapy, PMCT)
 (4, 5).

1가
 2가

1996 가
 2000 2 22

2000 8 8

PMCT

PMCT

PMCT

TACE PMCT

가 PMCT 2-

6 1-3 (2.1)

1-10

가

197 5 2000 1 TACE 가 (Fig. 1).

PMCT 19 25 가 가 1 -29 (12.3)

15 : 4

CT

31-72 (55.4)

18 (B 16 , C 1 , non-B non-C 1)

(1) Child 16 Class A

, 3 Class B

1.2-10.0 cm(3.4 cm) , 7

, 12 2-3

TACE

가 3 asparate aminotransferase(AST)/alanine amino-transferase(ALT)

TACE 1 4-138 (25.4

) PMCT PMCT

Microtaze(Shoji Kaisha Ltd., Osaka, Japan)

(microwave generator) (electrode) 25

PMCT

1% lidocaine hydrochloride 7 (28.0%) CT

14- 18 (72.0%)

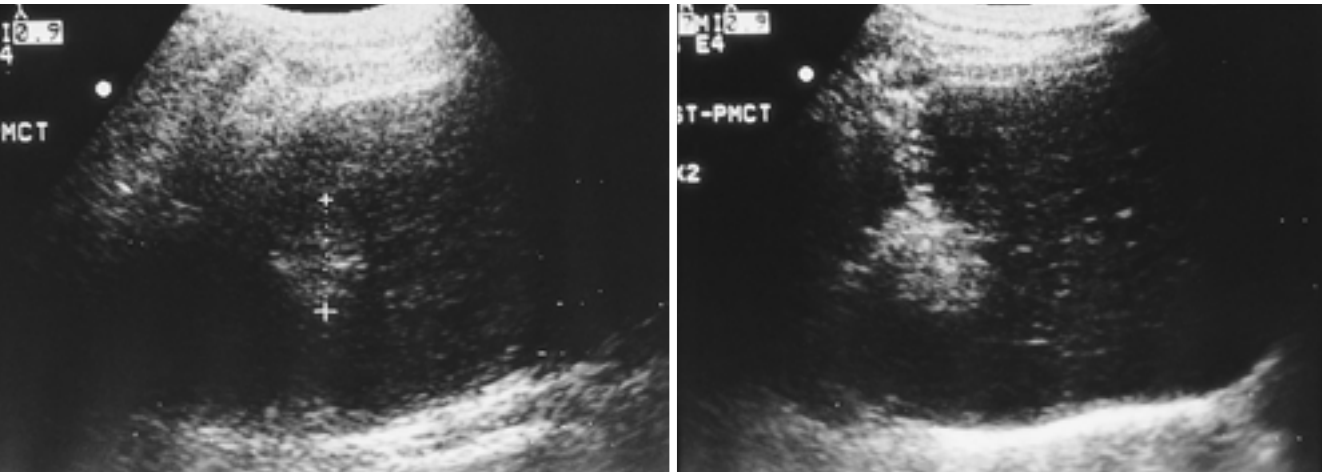
(Fig. 2, Table 1), 4 cm 85.7%

(100%) (p=0.003).

2.5 cm ,

18 8

2 2-3 PMCT



A

B

Fig. 1. Ultrasound-guided percutaneous microwave coagulation therapy(PMCT)

A. Pre-PMCT ultrasonogram shows an oval, 2.6cm diameter hepatocellular carcinoma(HCC) in right hepatic lobe indicated by cursors.

B. Immediately after the PMCT, the HCC and surrounding normal liver parenchyme became highly echogenic due to coagulation and steaming.

가 CT 가 8 -
18
5 가 19.5 - 2,881.0 ng/mL
15.0 ng/mL 가
12 (63.2%) PMCT AST/ALT가 50 -
252 U/L 1 5 - 37 U/L
PMCT (8), (37 - 38 °
C)(5), (38 °C) (2),
(1)
3

PMCT . 1970
(microwave energy)가
(6, 7),
(8 - 12),
(13). Tabuse (14)
PEIT
(fibrotic)
가
PMCT
(texture)
PEIT
(4, 5).
PMCT

Table 1. Results of Treatment according to HCC Size(n = 25)

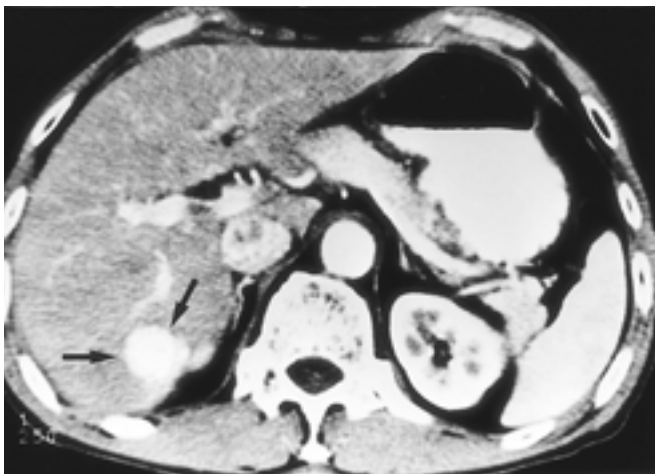
	4cm	> 4cm	Total
CR rate	85.7%(18/21)	0%(0/4)	72.0%(18/25)
MR rate	14.3%(3/21)	100%(4/4)	28.0%(7/25)

Fisher's Exact Test $p = 0.003$

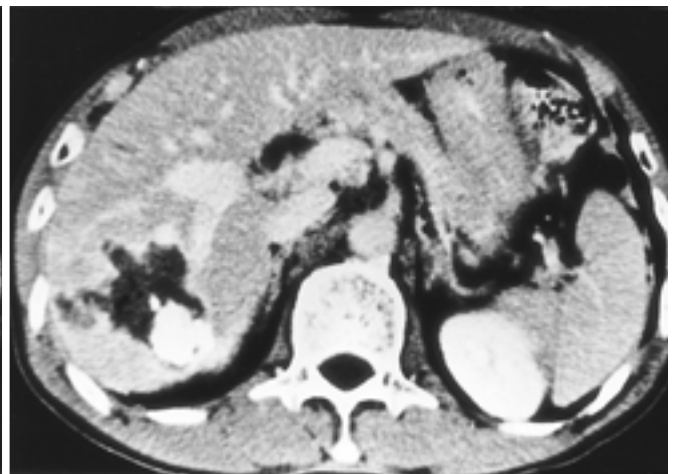
HCC: hepatocellular carcinoma

CR: complete remission

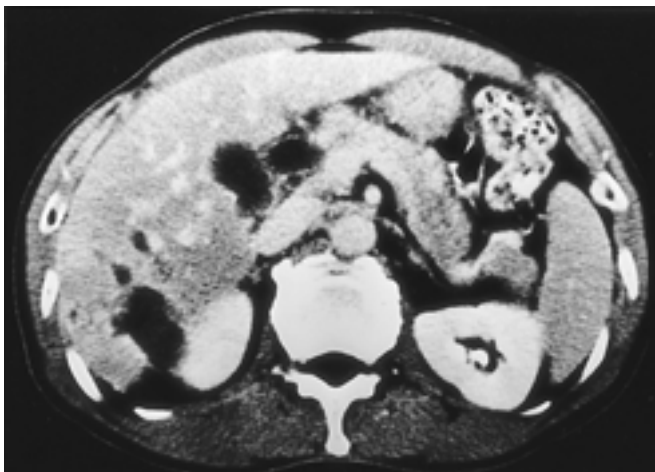
MR: marginal recurrence



A



B



C

Fig. 2. Effect of PMCT combined with transcatheter arterial chemoembolization(TACE) in 64 year-old HCC patient.

A. Initial abdominal CT scan shows well-enhancing, 2.3cm diameter HCC(arrows) in segment 6.

B, C. Follow-up abdominal CT scan obtained 2 months after PMCT shows extensive coagulation necrosis of the lipiodol-stained HCC including adjacent normal liver parenchyma.

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Percutaneous Microwave Coagulation Therapy combined with Transcatheter Arterial Chemoembolization for Hepatocellular Carcinoma: Preliminary Results¹

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Purpose: To evaluate the efficacy of percutaneous microwave coagulation therapy (PMCT) combined with transcatheter arterial chemoembolization (TACE) for the treatment of hepatocellular carcinoma (HCC).

Materials and Methods: Twenty-five nodular HCCs [long diameter of 1.2 - 10 (mean, 3.4) cm] in 19 patients (15 males and 4 females) were treated by PMCT 4 - 138 days after TACE. Under ultrasound guidance, the carcinomas were punctured with a 14-G guidewire through which a microwave electrode (25.0 cm in length, 1.6 mm in diameter) was inserted. To coagulate the HCCs and surrounding hepatic parenchyma, microwave irradiation at 60W for 45 - 60 seconds was then applied. One to three sessions of PMCT were performed at intervals of 2 - 6 days, and one week to 29 months later, the therapeutic effect was evaluated by spiral CT, angiography, and serum alpha-fetoprotein.

Results: Eighteen of 25 HCCs (72.0%) were necrotized completely, but seven (28.0%) recurred. Ninety percent of HCCs smaller than 4 cm in long diameter showed complete remission, but all those larger than 4 cm recurred. Alpha-fetoprotein levels decreased markedly in five patients (26.3%), while in 12 (63.2%), aspartate aminotransferase (AST)/alanine aminotransferase (ALT) showed transient elevation. Minor complications occurred after PMCT (mild abdominal pain in 8 patients, fever in 7, pleural effusion in 3, portal vein thrombosis in 1, and hepatic abscess in 1), but in no case was this serious.

Conclusion: PMCT combined with TACE provides effective and safe treatment for nodular HCCs with a long diameter of less than 4 cm.

Index words : Liver, interventional procedures

Microwaves

Liver neoplasms, chemotherapeutic embolization

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