

: CT 1

2.

: CT
 : 3
 3 CT 19 47
 (n=32) (n=15)
 14mm 14mm 가 26 , 14mm 가 21
 3mL 100mL CT
 30 , 60 , 180 , , . CT

14mm 14mm
 : 31 가 9 , 5 ,
 2 . 34 , 10 , 2 , 1
 34 , 13 . 47 18 가 ,
 14mm 26 2 (8%) , 14mm 21 16
 (76%) 14mm
 : CT 가 가
 . 가14mm 76%가 CT .

1cm
 (hepatocarcinogenesis)
 (1-6) ,
 가 1995 5 1998 5
 (MR) T1 , T2 3 (n=7) (n=12)
 (CT) (n=2) (n=1)
 7). CT (1, 12 , 7
 35 70 51 . 47
 (n=32) 19.5G (Autovac Gun;
 Angiomed, Karlsruhe, Germany)
 (n=15)
 8-45mm (: 14mm). 14mm
 14mm 가 26 , 14mm
 21 (ordi-
 nary adenomatous hyperplasia) 39 , (atypi-
 cal adenomatous hyperplasia) 8 . CT

¹
²
 1999 3 22 1999 8 19

CT HiSpeed Advantage System (GE Medical System, Milwaukee, WI) Ultravist 370 (Iopamide, Schering AG, Germany) 3mL 100mL 30, 60, 180 7mm 7mm CT 2-81 (: 30). CT 가

square test

47 가 31 (66%) 가 9 (19%), 5 (11%), 2 (4%) 34 (72%), 10 (21%), 2 (4%), 1 (2%) 34 (72%) 가 13 (28%) 가 가 29 가 8 (Fig. 1). (Table 1) (Fig. 2, 2 가 (Fig. 3). 47 16 13 13 18 가

(p > 0.05). 14mm 26 2 , 14mm 21 16 가 가 가 (p < 0.05) (Table 2). 3 (6%) (Fig. 2), 1 (2%) 32 4 (13%) 가 14mm 26 1 (4%), 14mm 6 3 (50%) 가

Table 1. Triple-Phase Helical CT Findings of Adenomatous Hyperplasia

Hepatic Arterial Phase	Portal Venous Phase	Equilibrium Phase	Number		
			14mm (n= 26)	> 14mm (n= 21)	Total (n= 47)
Iso	Iso	Iso	24 (92%)	5 (24%)	29 (62%)
Hypo	Hypo	Hypo	1 (4%)	7 (33%)	8 (18%)
Hyper	Iso	Iso	-	3 (14%)	3 (6%)
Mixed	Mixed	Hypo	-	2 (10%)	2 (4%)
Hyper	Hyper	Iso	1 (4%)	-	1 (2%)
Hyper	Iso	Hypo	-	1 (5%)	1 (2%)
Iso	Iso	Hypo	-	1 (5%)	1 (2%)
Iso	Hypo	Hypo	-	1 (5%)	1 (2%)
Hypo	Hypo	Iso	-	1 (5%)	1 (2%)

Iso: Iso-attenuation, Hypo: Hypo-attenuation, Hyper: Hyper-attenuation, Mixed: Mixed attenuation

Table 2. Detection of Adenomatous Hyperplasia on Triple-Phase Helical CT

	14mm (n= 26)	> 14mm (n= 21)	Total (n= 47)
Hepatic Arterial Phase	2 (8%)*	14 (67%)*	16 (34%)
Portal Venous Phase	2 (8%)†	11 (52%)†	13 (28%)
Equilibrium Phase	1 (4%)‡	12 (57%)‡	13 (28%)
All Phase	2 (8%) §	16 (76%) §	18 (38%)

(* , † , ‡ , § : p < 0.05)



Fig. 1. Helical CT scan shows homogeneous hypo-attenuation nodule (arrow) on hepatic arterial (A), portal venous (B), and equilibrium phase (C).



Fig. 2. Hepatic arterial phase CT scan (A) shows homogeneously enhancing nodule (arrow) at right lobe of the liver. There is no demonstrable mass on portal venous (B) and equilibrium phase (C).

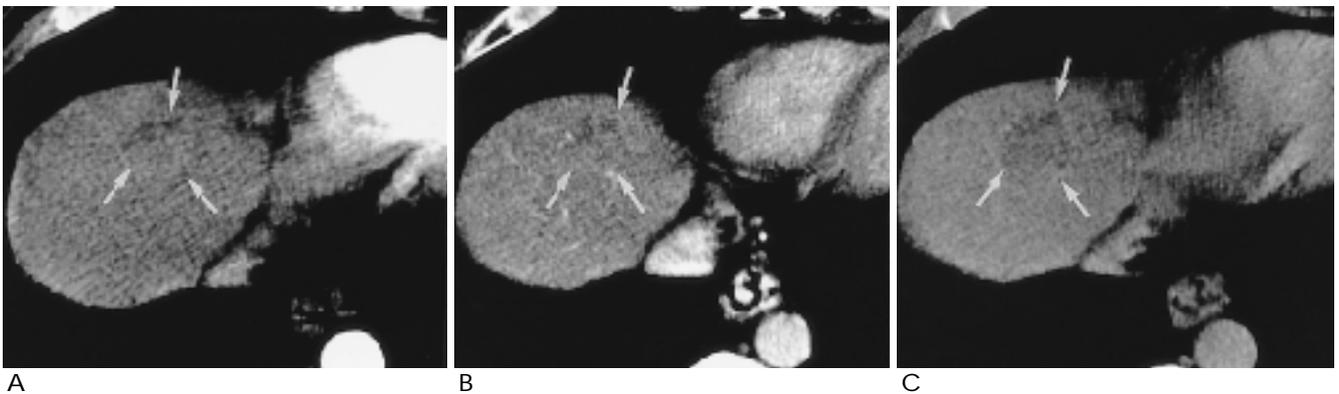


Fig. 3. Hepatic arterial (A) and portal venous phase CT scan (B) show mixed-attenuation nodule (arrows) at liver dome. On equilibrium phase (C), nodule becomes hypo-attenuation (arrow) compared with surrounding liver parenchyma.

(macroregenerative nodule),
 가 (hepatocellular pseudotumor) 가
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 (dysplastic nodule) 가 (11)
 가 (cumulative lu-
 (8).
 가
 (1, 7).
 (nuclear/cytoplasmic ratio) 가 (1).
 가 (1, 8-9). Sakamoto (2) (21%, 18%), (47%, 53%), (94%,
 가 (3-6). Krinsky (12) CT MR
 Matsui (10) CT (CT during arterial portog- CT (CT hepatic arteriography, C- (unpaired artery)
 THA), CT 가 CT THA
 CTAP

Adenomatous Hyperplasia of the Liver : Triple-phase Helical CT Findings¹

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Purpose : To evaluate the triple-phase helical CT findings of adenomatous hyperplasia of the liver.

Materials and Methods : Forty-seven cases of adenomatous hyperplasias (size range: 8-45 mm, mean: 14mm) in nineteen patients were confirmed by histologic examination following surgery (n= 32) or gun biopsy (n= 15) and formed the basis of this study. All patients underwent helical CT scanning involving the injection of 100mL nonionic contrast material at a rate of 3mL/sec. Hepatic arterial, portal venous, and equilibrium phase CT images were obtained 30, 60, and 180 seconds, respectively, after the start of contrast injection. The attenuation of each nodule (hyper-, iso-, hypo-, or mixed) was retrospectively determined and the detection rate according to lesion size (\leq 14mm or $>$ 14mm) was evaluated.

Results : Nodule attenuation during the hepatic arterial phase was iso- in 31 nodules, hypo-in nine, hyper-in five, and mixed in two. The results obtained for the portal venous phase were iso-attenuation in 34 nodules, hypo-attenuation in ten, hyper-attenuation in one, and mixed in two. During the equilibrium phase, attenuation was iso-in 34 nodules and hypo-in 13. Triple-phase helical CT detected 18 nodules (38 %); the detection rate was 8 % (2/26) in the small size group(\leq 14mm) and 76 % (16/21) in the large size group($>$ 14mm). This rate was thus significantly higher in the large size group than in that in which lesions were small.

Conclusion : Triple -phase helical CT revealed that in cases of adenomatous hyperplasia, attenuation was variable, with iso-attenuation the most frequent type. Seventy-six percent of nodules larger than 14 mm were detected. Adenomatous hyperplasia may be seen during the hepatic arterial phase as a hyper-attenuated nodule.

Index words : Liver neoplasms, CT
Liver, nodule
Computed tomography (CT), helical

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