

1

2 . 3 . 4 . .

:

CT

32

CT

38-45

3

4ml/sec  
가

가

가

2

가

: 32

30

2

(T2)  
27%(8/30)

CT

가

3

IIc+III, 1

IIc+IIa,

1 5  
1 IIb + IIc

2

IIb+IIc, 1

IIc+IIa, 3

2 6  
IIc+IIb

. 11

2 가 , 9 가

64%(19/30)

가

11

CT

CT

IIc

CT

EGC II  
가

III

가

CT

(1-13).

( CT)

가

가

CT

(1-13). TNM

T

가

CT

30

CT

32

CT

20

12

1999 1 27

1999 4 16

1  
2  
3  
4

45 (30-72 )  
 CT Somatom plus 4B(Siemens  
 Medical system, Erlangen, Germany)  
 12 30  
 500cc 800-1000cc  
 가  
 150cc (320mg/ml, Iopamidol, IIsung,  
 Seoul, Korea) 4 mm/sec  
 45 ( ) 3 ( )  
 CT 120kVp, 220mAs, 5-8mm , 5-  
 10mm/sec (pitch = 1-1.5), 5-8mm

5mm  
 8mm  
 32 CT CT  
 CT 2  
 Japan Research  
 Society (14); (type I),  
 (type IIa: , type IIb: , type IIc:  
 ), (type III). CT  
 가  
 CT ( , )

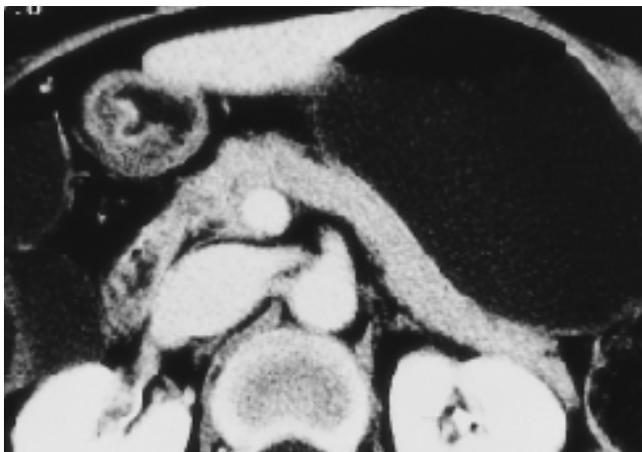
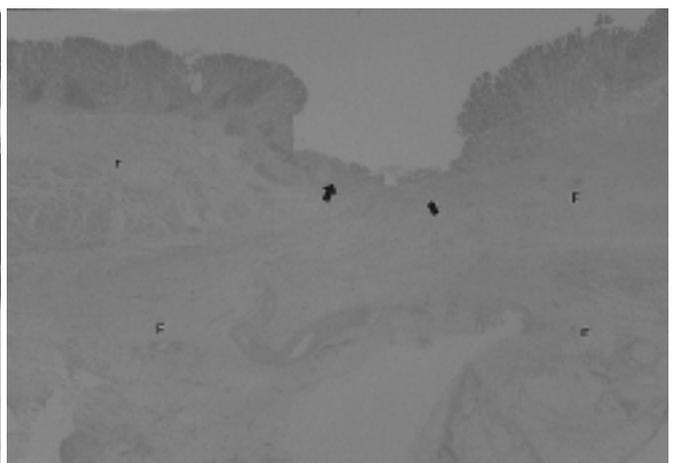


Fig. 1. Typical hyperattenuating submucosal EGC type IIc+IIa in the distal antrum(arrows) on mucosal phase helical CT is well demonstrated with thickened and preserved hypoattenuating outer layer.

. CT  
 가 1  
 2  
 32 30 10  
 (pTis group) 20 (pT1 group)  
 1.4cm 2.2cm



A B  
 Fig. 2. A. EGC type 1 lesion of atypical enhancement pattern(IIc+ III). A focal mucosa-disrupted lesion with thickened hypoattenuating outer layer(arrows) is well noted in the lesser curvature of the lower body on mucosal phase helical CT.  
 B. Macroscopic section shows a IIc+ III EGC lesion, that accounts for the focal mucosa-disrupted lesion on A, with remarkable thinnings of the underlying submucosa and muscle proper(solid arrows). The mild submucosal and remarkable subserosal fibrosis is seen on either side(F) that mainly accounts for the thickened hypoattenuating outer layer on A.

2-

3-  
가

8 (8/30, 27%) (Fig. 1)

가 , CT CT

2 9 11 (11/30, 37%)

1 (Fig. 2) 5 EGC IIc+III 3 , IIb+IIc 1 , IIc+IIa 1

(15-21). T CT

2 6 EGC IIb+IIc 2 , IIc+IIa 1 , IIc+IIb 3

(22).

가 가 2 (Fig. 3).

(22).

2 (pT2) (Fig. 4) 11

(23-25). CT T 가

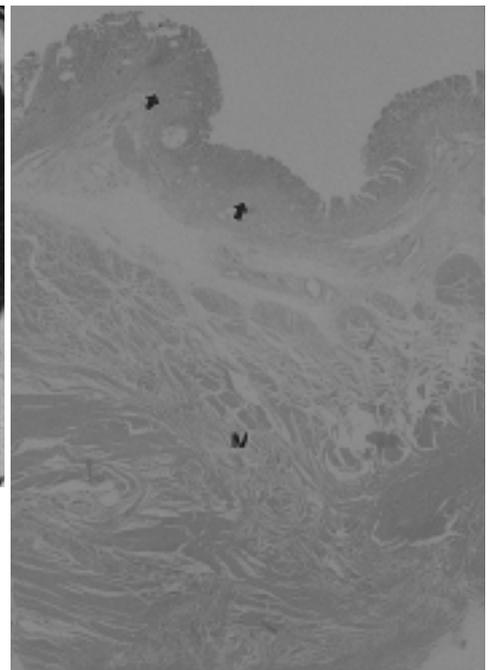
CT 64%

CT

가 2



A



B

Fig. 3. A. EGC type 2 lesion of atypical enhancement pattern(IIc+ IIa). A localized protruded lesion of the inner hyperattenuating and thickened hypoattenuating outer layer(arrow) is well demonstratable in the lesser curvature of distal antrum on mucosal phase helical CT.

B. Macroscopic section shows a IIc+ IIa EGC lesion (arrows) with remarkable thickening of the outer muscle proper(M) that mainly accounts for the thickened hypoattenuating outer layer on A.



CT EGC IIc  
 가  
 CT IIc  
 가  
 CT 가  
 가  
 가  
 가  
 Takao(13)  
 23%  
 CT  
 가  
 (EGC type 1)  
 (1, 4, 12, 13) EGC type 1  
 EGC type 1  
 가  
 endo 3D-CT(가  
 가  
 (26). Lee  
 CT 3D-CT 90%  
 CT  
 가  
 CT  
 IIc  
 CT가

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## **Efficacy of Two-Phase Helical CT Emphasizing Gastric Mucosal Phase in Detection of Early Gastric Cancer with Atypical Enhancement Pattern<sup>1</sup>**

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**Purpose :** To evaluate the efficacy of two-phase dynamic helical CT, including the gastric mucosal phase, for the detection of atypical non-hyperattenuating early gastric carcinoma (EGC).

**Materials and Methods :** In 32 patients, we evaluated the two-phase helical CT findings of endoscopically suspected EGC for changes of the inner hyperattenuating mucosal layer, the hypoattenuating outer layer and the serosal surface. Two gastrointestinal radiologists working together reached their conclusions before pathologic diagnosis had been made. The first, so-called gastric mucosal, phase was obtained 38-45 sec after the start of IV injection of 150 ml/sec contrast material at a rate of 4 ml/sec to obtain maximum enhancement of the mucosal layer.

**Results :** Among 32 patients, EGC was confirmed in 30 and AGC (T2) in two. Using two-phase helical CT, the detection rate for typical hyperattenuating EGC was 27 % (8/30). Lesions showing focal interruption of the mucosal layer without abnormal enhancement of the outer layer (EGC atypical enhancement pattern type 1) were detected in five patients during the mucosal phase, and were pathologically confirmed as 3 EGC IIc+ III, 1 IIc+ IIa, and 1 IIb+ IIc. Lesions showing a locally protruding lesion of the inner and preserved outer layers, with a smooth serosal surface (EGC atypical enhancement pattern type 2) and which could be distinguished from normal folds, were detected in six patients during the mucosal phase, and were pathologically confirmed as 2 EGC IIb+ IIc, 1 IIc+ IIa, and 3 IIc+ IIb. Lesions were less distinct during the equilibrium phase, and there was no change in the enhancement pattern. The overall detection rate for EGC in which an atypical enhancement pattern was added to the typical one showed improvement (19/30, 63 %).

**Conclusion :** Helical CT using a two-phasic scan technique including the mucosal phase was efficient for various combinations of EGC II and/or III, including IIc. The findings were atypical and non-hyperattenuating, but reliable, and improved the overall detection rate.

**Index words :** Stomach, neoplasms  
Stomach, CT  
Computed tomography(CT), helical  
Neoplasms, staging

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