

CT

1

2 2 2 2 2

: CT CT (colonogram) , CT
 . CT 33 CT
 : CT 11 CT
 . CT 가 CT
 . Dukes (Astler - Coller)
 . CT
 : CT 33 32 97% 가 .
 23 70%
 CT 30 , 가
 3 , 가 , 100%, 50%, 91%
 CT 가 25 , 가 4 , 가
 4 69%, 80%, 76% . CT
 11 (100%) 가 , 1 91%
 (100%)
 : CT
 , CT

,
 (1, 2). 가 .
 가
 (computed tomography;
 , CT) . CT 가
 가
 (3). (positive
 , (negative
 contrast media)
 contrast media) (6 - 10).
 가 (4, 5). 가
 가 (7 - 10).
 가 CT

가

1
 2

2001 12 20 2002 8 14

CT 가 ,

가 (colonogram)
CT 가 (virtual colonoscopy)
CT 가 (11 -

14).

CT

CT 33
21 , S 7 , 3 ,
1 가 41
78 59 21:12
CT 5 Colon -
lyte (Meditech, Seoul, Korea) 4 L 240 ml 10

6 Dulcolax (Boehringer Ingelheim, Seoul, Korea) 1
CT Foley 가

(scanogram)
가 가
CT Hi - Speed CT - i/Pro (GE Medical Systems, Milwaukee, U.S.A.) ,
가
5 mm 10 mm/sec

(Ultravist 370, Schering, Germany) 120 ml 3 ml/sec
70 ,
10 mm 10 mm/sec

11 3 mm
Advantage Windows Workstation (GE Medical Systems, Milwaukee, U.S.A.) ray sum display
CT
가 CT
, Dukes (Astler - Coller)
(15, 16)
CT
X -
, S , ,
5 mm

CT

Dukes (Astler - Coller)
Dukes (Astler - Coller) A , B1/C1
, B2/C2
B, C
10 mm 3
10 mm
CT 11
(
CT S 1
97% 가
CT Table

Table 1. Correlation of Air Insufflation Helical CT Image and Pathologic Staging in Colorectal Cancer

CT Staging	Pathologic staging						Total
	A	B1	B2	C1 [†]	C2	D [†]	
A	0	0	0	0	0	0	0
B1	0	3*	0	0	0	0	3
B2	0	2	11*	0	4	0	17
C1 [†]	0	0	0	0	0	0	0
C2	0	1	3	0	9*	0	13
D [†]	0	0	0	0	0	0	0
Total	0	6	14	0	13	0	33

* CT stage was concordant with pathologic stage.

[†] Not exist C1 and D at CT and pathologic stage.

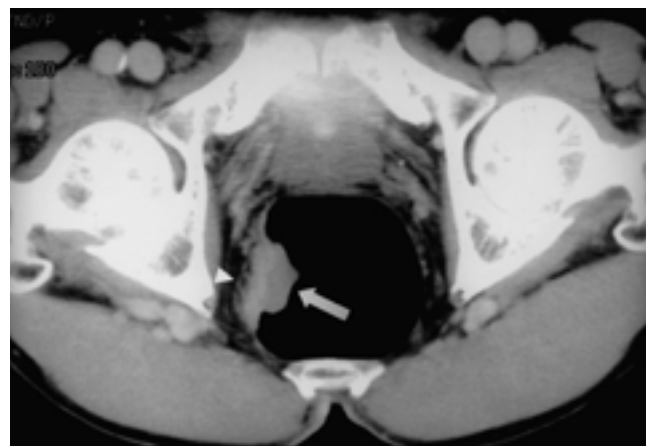


Fig. 1. Postcontrast air insufflation helical CT shows fungating mass (arrow) of right lateral wall of rectum and linear strands (arrow head) into perirectal fat plane. Pathologic examination revealed tumor invasion into perirectal fat.

1 . 33 23
 가 70% 2 B1 B2 , 1 B1
 C2 , 3 B2 C2 가 , 4 C2
 B2 가 , B1 가 50%
 100%, B2 가 79% 68%, C2
 가 69% 80% . C1
 .
 - B1/C1 B2/C2
 - 33 30 가 (Fig. 1), 3
 가 가 100%,
 50%, 91% (Table 2). 25
 가 (Fig. 2), 4 가 4
 가 69%, 80%, 76%
 (Table 3).

Table 2. Assessment of Local Invasion of Colorectal Carcinoma by Air Insufflation Helical CT Image

CT	Pathology		Total
	Invasion [†]	Noninvasion	
B1 or C1	27*	3	30
B2 or C2	0	3*	3
Total	27	6	33

* CT stage was concordant with pathologic stage.

[†] Perirectal invasion at rectum and serosal invasion at other colonic loop.

Table 3. Assessment of Lymph Node(LN) Involvement of Colorectal Cancer by Air Insufflation Helical CT Image

CT	Pathology		Total
	LN(+)	LN(-)	
LN(+)	9*	4	13
LN(-)	4	16*	20
Total	13	20	33

* CT stage was concordant with pathologic staging

1
 가 2
 CT X-
 , 2
 CT 11 (100%)
 가 (Fig. 3), 1 10
 .
 CT
 (17, 18), CT

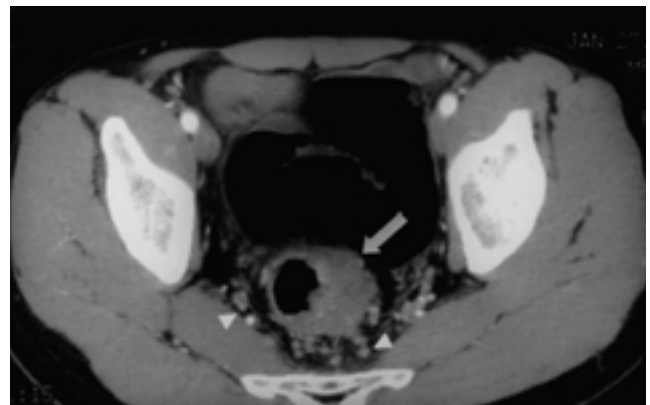
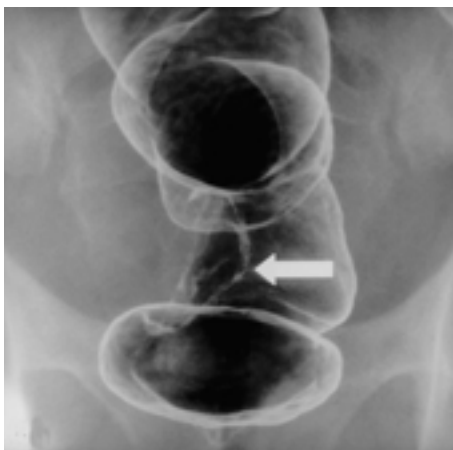


Fig. 2. Postcontrast air insufflation helical CT shows marked wall thickening (arrow) of left lateral wall of rectum. Numerous small sized lymph nodes (arrow heads) are noted in pericolic fat (Astler-Coller classification; C2). Pathologic examination revealed multiple metastatic pericolic lymph nodes.



A



B

Fig. 3. Barium enema (A) and CT colonogram (B) show irregular polypoid filling defect (arrow) in right lateral wall of rectum.

CT

가

CT 10 mm 10

mm 3

(19, 20).

CT Gazelle (3)

60% 79%

CT Thompson (25) 가 22% 75% CT Harvey 56%

(1) 96% CT

가 가 69% 80%

CT 95%

CT가 (21) CT

CT 97%

가 97%

가

CT X-CT

X- (misregistration)

CT

CT 64 - 100%

(1, 2, 6, 7, 21 - 25).

CT (11 - 13). CT ray sum display

(volume rendering)

CT Ogata (12) ray sum display CT (stomach) 100%

63%,

가 100%

11 CT , 1 91%

가 , 1

CT

CT ray sum display 가 CT CT

가

Thompson (25) 77% 57% CT

CT Harvey (1) 가 100% 33% 가

가

가 100% 50%

Thompson Megibow (24) CT 가

CT
CT

CT

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The Usefulness of Air Insufflation Helical CT in Colorectal Cancer¹

Ji-Hye Choi, M.D., Heoung-Keun Kang, M.D.², Yong-Yeon Jeong, M.D.², Song Choi, M.D.²,
Gwang-Woo Jeong, Ph.D.², Tae-Woong Chung, M.D.², Byong-Lan Park, M.D.

¹Department of Diagnostic Radiology, Kwangju Christian Hospital

²Department of Diagnostic Radiology, Chonnam National University Hospital

Purpose: In patients with colorectal carcinoma, helical CT using air as a contrast agent provides axial images and a three-dimensional CT colonogram similar to that provided by barium enema. The purpose of this study was to assess the usefulness of air insufflation helical CT in colorectal cancer patients.

Materials and Methods: Thirty-three patients with colorectal carcinoma confirmed by surgery underwent air insufflation helical CT scanning after the infusion of air through the anus. In eleven who underwent barium studies, CT colonograms were also obtained. Two radiologists, who reached a consensus, analysed the detection rate, location and staging of the tumors; staging was based on the modified Dukes (Astler-Coller) classification.

Results: Using axial helical CT, the detection rate was 97%; staging was correct in 23 of the 33 patients, with an overall accuracy of 70%. Pathologic correlation was correct in 30 of the 33 cases (three were overestimated), and sensitivity, specificity and accuracy were 100%, 50%, and 91%, respectively. With regard to the involvement of lymph nodes, pathologic correlation was correct in 25 of the 33 patients; four were overestimated and four were underestimated. Sensitivity, specificity and accuracy were 69%, 80%, and 76%, respectively. The detection rate of CT colonography was 100%, but because in one case there was a discrepancy between CT colonography and barium enema as to the shape of the carcinoma, the agreement rate was 91%.

Conclusion: Air insufflation helical CT, which provides a higher detection rate and more precise staging of colorectal carcinoma than the use of positive contrast materials and three dimensional depiction of tumor location, is helpful for the evaluation of colorectal carcinoma.

Index words : Colon, CT

Colon, air

Colon, neoplasms

Address reprint requests to : Ji-Hye Choi, M.D., Department of Radiology, Gwangju Christian Hospital,
264 Yangrimdong, Namku, Gwangju 503-040, Korea.
Tel. 82-62-650-5196 E-mail: ch2975@hananet.net