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## COLON CANCER: RADIOGRAPHIC FINDINGS DETECTED BY BARIUM ENEMA.

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**OBJECTIVE :** To determine the radiographic findings detected by barium enema in the patients of colon cancer.

**DESIGN :** Retrospective, descriptive study.

**SETTING :** Department of Radiology, Faculty of Medicine, Khon Kaen University.

**SUBJECTS :** All patients of colon cancer performed barium enema between January 1993 and February 1998.

**DATA COLLECTION :** Review from medical records, endoscopic notes, radiographic reports, operative notes, and pathological reports.

**MEASUREMENT :** Descriptive statistics, including number, means, and percentages.

**RESULTS :** One hundred and eighteen patients were reviewed. No asymptomatic patients found. Seventy-nine patients (66.95%) had annular lesions, 29 (24.58%) had semiannular lesions, 4 (3.39%) had polypoid lesions, 6 (5.08%) had other lesions. Sixty-four patients (54.24%) had lesions in the sigmoid colon or below, and 54 (45.76%) had lesions more proximally in the colon. Four patients (3.39%) had Dukes' stage A lesions; 29 (24.58%), stage B lesions; 43 (36.44%), stage C lesions; 42 (35.59%), stage D lesions. All patients of Dukes' stage A had polypoid lesions.

**CONCLUSIONS :** Almost all patients had annular or semiannular lesions. Polypoid lesions related directly to Dukes' stage A (100%).

Some foreign researches demonstrated the detection rate of colon cancer by barium enema examination.<sup>1-3</sup> Some studies demonstrated the pattern of radiographic findings correlated with the pathologic findings, esp. in the early colon cancer.<sup>4-7</sup> However, Thai life style differs from the

western style, as we know. So we have to focus on the late cases instead of the early ones. The purpose of this study is to demonstrate the pattern of radiographic findings found in the patients living in northeast part that has the lowest economic status in Thailand.

## MATERIALS AND METHODS

All patients of colon cancer performed double-contrast barium enema examinations between January 1993 and February 1998 were included in this study. Medical records, endoscopic notes, radiographic reports, operative notes, and pathologic reports were reviewed. Clinical parameters that were evaluated included signs and symptoms such as bowel habit change, mucous bloody stool, weight loss, abdominal mass, abdominal pain or distention, constipation.

The pattern of radiographic findings was divided into 4 groups that were annular (figure 1), semiannular (figure 2), polypoid, and other lesions. The semiannular lesions represented all varied lesions between polyp and annular lesion, i.e. polypoid mass (figure 3) that was more than 2 cm in

greatest dimension, intraluminal mass, saddle mass (one-third to one-half of circumference). In this study, ulcerated lesions were not divided into separate group but included in annular or semiannular groups instead. The last group included the remaining lesions besides the first three groups; e.g. scirrhous lesion, submucosal lesion, etc.

Dukes' staging was used to classify the pathologic findings.<sup>8</sup> Tumor confined to mucosa was Dukes' stage A; tumor confined to serosa was stage B; tumor with local lymph node metastases was stage C; and distant metastases was stage D.

The descriptive statistics (number, means, and percentages) were used to analyze the data.



**Fig.1** Annular lesion. Spot radiograph of the mid-rectum showed a circumferential mass, 5 cm long, which was a classic core appearance.





**Fig.2** Semiannular lesion. Spot radiograph of splenic flexure of colon showed a 3-cm saddle lesion that was straddle one-third of circumference of the mesenteric site of distal part of transverse colon.



**Fig.3** Polypoid lesion. Prone cross-table rectal film showed a 3-cm polypoid mass at posterior aspect of lower rectum with a broad base and lobulated surface.

## RESULTS

### Clinical findings

All patients had one or more symptoms and signs. The most common symptoms included bowel habit change 86.3%, weight loss 58.1%, and abdominal pain 57.3%. The most common signs included mucous bloody stool 61.5%, abdominal mass 38.5%, and distant metastases 34.94%.

### Radiographic findings

Almost all patients (91.53%) were characterized as annular (66.95%) or semiannular (24.58%) lesions, whereas the polypoid lesion was found in only 3.39% (Table 1). More than half of the patients (54.24%) had lesions locating at sigmoid colon or below, whereas the remainder (45.76%) located above that part. (Table 2).

**Table 1** Morphology detected by barium enema.

Morphology	Amount	Percent
Annular	79	66.95
Semiannular	29	24.58
Polypoid	4	3.39
Other	6	5.08
Total	118	100.00

**Table 2** Location of colo-rectal cancer.

Location	Amount	Percent
Rectum	34	28.82
Sigmoid colon	30	25.42
Descending colon	14	11.87
Transverse colon	8	6.78
Ascending colon	18	15.25
Cecum	14	11.86
Total	118	100.00

### Pathologic findings

All Dukes stage A patients (4 cases, 3.39%) had polypoid lesions grossly. About one-third of the patients (42 cases, 35.59%) had Dukes stage D lesions (Table 3). When considering the histologic findings, most specimens showed adenocarcinoma (88.10%), the remaining were distributed in 1 or 2 cases in each types. (Table 4)

**Table 3** Pathologic staging of colo-rectal cancer.

Dukes stage	Amount	Percent
A	4	3.39
B	29	24.58
C	43	36.44
D	42	35.59
Total	118	100.00

**Table 4** Histologic findings of colo-rectal cancer.

Histologic findings	Amount	Percent
Adenocarcinoma	104	88.14
Mucinous adenocarcinoma	2	1.69
Mucin producing adenocarcinoma	2	1.69
Signet ring cell	2	1.69
Adenocarcinoma in adenomatous polyp	2	1.69
Carcinoid	1	0.85
Papillary adenocarcinoma	1	0.85
Mucinous cystadenocarcinoma	1	0.85
Liposarcoma	1	0.85
Leiomyosarcoma	1	0.85
Carcinoma NOS	1	0.85



## DISCUSSION

At our institution, there were three differences from other studies. Firstly, all of our patients underwent barium enema examination because of significant symptoms and signs.<sup>6</sup> Secondly, almost all patients had annular or semiannular lesion.<sup>6</sup> Finally, one-third of patients had advanced stage (Dukes D) of cancer.<sup>6-7</sup> However, there were also two similarities. Firstly, Dukes stage A was found only in 3-4%. And around half of patients could be detected lesions by using barium enema and sigmoidoscopy.<sup>6</sup>

The American Cancer Society, the American College of Physicians, and the National Cancer Institute all currently recommend fecal occult blood testing every year and flexible sigmoidoscopy beginning at age 50 years every 3-5 years for colon cancer screening. Perhaps eating behavior or other factors, the incidence of colon cancer in Thailand is increasing, esp. in the town people.

Although very few screening examinations have been performed at our hospital, we encourage that these should be considered increasingly. Because more early lesions, better prognoses are received. Patients with Dukes stage A have survival rate almost equal to age-matched subjects without colon cancer. Patients with Dukes stage B have 5-year survival rate of 80-85%. Patients with Dukes stage C have 5-year survival rate of about 70%. And patients with Dukes stage D have 5-year survival rate of only 6-14%.<sup>7,9</sup> When considering the half of the patients who can be detected by barium enema and sigmoidoscopy (lesions below rectosigmoid junction). Because the barium enema and sigmoidoscopes are available in almost all provincial hospital, cancer lesions can be detected earlier.

Similar to other studies.<sup>6-7</sup>, the morphology correlated to the pathology was confined to the polypoid lesion which had the early stage of cancer (Dukes A).

## CONCLUSIONS

Almost all patients had annular or semiannular lesions. Barium enema and sigmoidoscopy that were available at all provincial hospital in Thailand could detect half of the patients of colo-rectal carcinoma. Polypoid lesions related directly to Dukes stage A (100%).

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