นิพนธ์ต้นฉบับ

Malignant tumors of esophagus, stomach and intestines in youth.

Saowanee Yenrudi*
Jajaval Dharmmaponpilas*

Yenrudi S, Dharmmaponpilas J. Malignant tumors of esophagus, stomach and intestines in youth. Chula Med J 1988 July; 32(7) : 615-623

There were 1,800 cases of malignant tumors of the esophago gastro-intestinal tract during 1975 to 1984 in which 92 cases (5.1%) were up to 30 years of age, 53 (57.6%) were male and 39 (42.4%) were female. Three (3.3%) were in the first decade, 22 (23.8%) and 67 (72.9%) were in the secound and third decades respectively. Abdominal pain and discomfort as well as diarrhea with or without bloody mucous stool were main clinical presentations in 62 large bowel malignancies. Obstruction, hematemesis and abdominal pain were chief complains of 19 gastric tumors while abdominal pain with gut obstruction were major leading causes in 11 small bowel lesions. Over all the mean duration of signs and symptoms was 2 to 6 months. The majority of cases with poorly differentiated carcinoma had a shorter period than that of well differentiated lesions.

Reprint requests : Yenrudi S, Department of Pathology, Faculty of Medicine, Chulalongkorn University, Bangkok 10500, Thailand.

Received for publication. April 8, 1988.

*Department of Pathology, Faculty of Medicine, Chulalongkorn University.

เสาวณีย์ เย็นฤดี, ชัชวาล ธรรมาภรณ์พิลาศ. มะเร็งของหลอดอาหาร กระเพาะอาหารและลำไส้ในวัยเยาว์. จุฬาลงกรณ์เวชสาร 2531 กรกฎาคม; 32(7) : 615-623

จากการวิเคราะห์มะเร็งของหลอดอาหาร กระเพาะและลำไส้ ระหว่างช่วง พ.ศ. 2518 ถึง พ.ศ. 2527 เป็นเวลา 10 ปี พบผู้ป่วยด้วยมะเร็งของทางเดินอาหารส่วนที่กล่าวมาแล้ว ประมาณ 1,800 ราย ในจำนวน 1,800 รายนี้ มีผู้ป่วยอายุตั้งแต่ 30 ปี ลงมา 92 ราย (5.1%) เพศชาย 53 ราย (57.6%) เพศหญิง 39 ราย (42.4%) ผู้ป่วย 67 ราย (72.9%) อยู่ในช่วงอายุ 21-30 ปี ถัดมาจำนวน 22 ราย (23.8%) อยู่ในช่วงอายุ 11-20 ปี และ 3 ราย (3.3%) อายุต่ำกว่า 10 ปี มะเร็งของลำไส้ใหญ่มักมาด้วยอาการปวดท้อง หรือไม่สบายในท้อง มะเร็งของกระเพาะอาหารมักมาด้วยทางเดินอาหารอุดตัน อาเจียนเป็นเลือดและปวดท้อง ในขณะที่มะเร็งของลำไส้เล็กมักมาด้วยอาการปวดท้อง และทางเดินอาหารอุดตัน ระยะเวลาเฉลี่ยก่อนที่ผู้ป่วยจะมาหาแพทย์ หลังจากมีอาการประมาณ 2-6 เดือน ส่วนใหญ่ของมะเร็งที่มีลักษณะของเซลล์มะเร็งแตกต่างจากเซลล์ปกติมาก ๆ มักจะมีระยะเวลาก่อนมาหาแพทย์สั้นกว่าพวกมะเร็งที่มีลักษณะของเซลล์มะเร็งใกล้เคียงกับเซลล์ปกติ

The most common primary malignant tumor of any part of esophagogastrointestinal tract originates from the surface epithelium. As a rule, the lesion is common during 5 to 7 decades with male preponderance. Epidemiologic study discloses significant findings which are different from part to part of the tract. Where the esophageal cancer is high, habit of consuming local distilled spirit is observed.[1] Poor crops and diseased plant leaves are also noted in area which has high incidence of esophageal canecr.[2] Consuming high starchy foods, low fresh fruit and vegetable as well as smoked food are also associated with increase incidence of gastric carcinoma.[3] Japaneses who consume talc treated rice are also related with occurence of gastric carcinoma.[4] There is excessive risk of large bowel cancer in people who regularly eat western style meal.[5] As previously mentioned, the cancer of this system is most common in old age. However, it is also observed in youth. The paper present herein primary malignancies of the esophagus, stomach and intestines in aged group up to 30 year old. Any difference which may be observed in anatomic location, features of neoplastic cells, and even prognostic indiecs in this period and the usual period of these malignant tumors are discussed.

Materials and Methods

Retrospective study of the primary malignancy of esophagogastro-intestinal tract was performed during 1975 to 1984. The data was limited to surgical specimen in the Department of Pathology, Faculty of Medicine, Chulalongkorn University. During 10 years period, there were over 1,800 cases of the malignant tumors of this system regardless to the age of the patients. Only 92 cases were up to 30 years of age. Clinical signs and symptoms according to anatomic location were tabulated as well as correlation between features of neoplastic cells and depth of tumor invasion or staging. Relation between duration of signs and symptoms to morphology of the neoplasm was performed as well. Staging of intestinal carcinoma based on Dukes'ABC classification and malignant tumors with or without lymph node involvement in the remaining neoplasms. The staging was concluded as the result of macroscopic examination and confirmed by microscopic study. Multiple sections for hematoxylin and eosin staining and special staining including Mayer's mucicarmine, Griedly method for reticulin, and Masson trichrome were done. The spceimens were obtained from incisional biopsy, gastrectomy. segmental resection and abdominoperineal resection.

Results

Of 92 cases, there were 53 male (57.6%) and 39 female (42.4%). The majority of patients, 72.9% (67 cases) were 21 to 30 year old. Only 3.3% (3 cases) were in the first decade. The remaining 23.8% (22 cases) were 11 to 20 year old. Signs and symptoms related to location (table 1) were as following: 15.2% (14 cases) at the cecum, appendix and ascending colon presented with nonspecific abdominal pain, abdominal discomfort and diarrhea, in the majority of them. No clinical history was obtained in 3.3% (3 cases). Mass with gut obstruction was noted in another one (1.1%). There were 6.6% (6 cases) located at transverse colon and hepatic flexor. Four cases (4.4%) were in splenic flexor and descending colon. All developed signs and symptoms similar to aforementioned proximal colon except 1.1% (one) at the descending colon exhibited gut obstruction. Most cases of 36 malignant neoplasms of the sigmoid colon and rectum (39.6%) manifested as bloody mucous stool. Malignant tumors of stomach came with signs and symptoms of obstruction, hematemesis, abdominal pain and fever in majority of 19 cases (20.7%). Abdominal pain was observed in majority of 11 cases of small bowel lesion with known history and two cases with abdominal mass. The other 2 patients each presented fever and gut obstruction. There were 54 patients, correlation between signs and symtoms to the degree of neoplastic cell differentiation was attempted (table 2). Over half of cases with poorly differentiated adenocarcinoma (Fig 1.) had a duration of signs and symptoms less than 3 months, while those with well differentiation (Fig 2) had duration more than 3 months. Over all, most frequent duration was 2 to 6 months. Major presentation of malignant lymphoma (Fig 3) was abdominal pain while abdominal mass was in the next frequency. A case of duodenal leiomyosarcoma (Fig 4) exhibited clinically jaundice for 2 months.

According to relationship between morphology and staging, a number of cases in advanced stage of 33 cases of poorly differentiated carcinoma was more than the cases with well differentiation. The total of the latter is 39 (table 3). However because of prolong period prior to definite diagnosis, advanced stage in tumor with well differentiation

was observed as well. Twenty two cases could not classified into any stage, because they were biopsy and limitation of the remaining pathological materials. In our series we found neither carcinoma nor lymphoma of esophagus.

Table 1 Signs and Symptoms According to Location

No of Case	Sex		Signs and symptoms	Location
	M	F		
14	7	4	Abdominal pain, discomfort, diarrhea and mass with gut obstruction; 7 days to 1 year	Cecum, appendix and ascending colon
	2	1	No history	
6	3	2	Abdominal pain, dirrhea alternate with constipation	Tranverse and hepatic colon
	1	–	Recurrent	
4	3	1	Abdominal pain, discomfort, gut obstruction and rectal bleeding	Splenic flexor and descending colon
36	17	13	Bloody mucous stool; 1 month to 2 years	Sigmoid colon, rectum and rectosigmoid area
	3	2	No history	
	1	–	Recurrent	
19	3	11	Obstruction, hematemesis, abdominal discomfort and abdominal pain	Stomach
	3	2	No history	
11	87	1	Abdominal pain with gut obstrution or with diarrhea or with mass	Small intestine
	1	–	No history	
	1	–	Recurrent	
2	–	2	No history	Colon
92	53	39		

Table 2 Duration of Signs and Symptoms Related to Degree of Histological Differentiation

Duration of signs and symptoms	Poorly differentiated CA	Well and moderately diff. CA
Up to less than 3 months	14	13
Three months to 1 year	9	17
More than 1 years	1	
Total	24	30

Table 3 Histology, Location and Depth of Tumor Invasion

Histology	Location	No.	Depth of invasion and staging
Poor diff. adenocarcinoma	Stomach	13	Lymph node + ve 3 Lymph node − ve 3 Unclassified 7 (biopsy 5)
Well diff. adenocarcinoma		3	Lymph node + ve 2 Lymph node − ve 1
Poor diff. adenocarcinoma	Cecum and ascending colon	2	Duke's B 1 C 1
	Hepatic and transverse colon	5	Duke's B 2 C 3
	Splenic and descending colon	−	
	Recto-sigmoid colon	12	Duke's B − C 6 unclassified 6
	Colon	1	Duke's B − C 1
Well diff. adenocarcinoma	Cecum and descending colon	7	Duke's A 1 B 5 C 1
	Hepatic and transverse colon	1	Duke's A − B 1 C −
	Splenic and descending colon	2	Duke's A − B 1 C 1
	Recto-sigmoid colon	26	Duke's A 3 B 11 C 3 unclassified 9 (biopsy 8)
Malignant lymphoma	Stomach	3	Lymph node + ve 3
	Small bowel (jejunum 5, ileum 3)	10	Lymph node + ve 5
	Cecum	3	Lymph node + ve 2
	Ascending colon	2	Lymph node + ve 2
	Descending colon	1	
Lieomyosarcoma	Duodenum	1	
	Total	92	

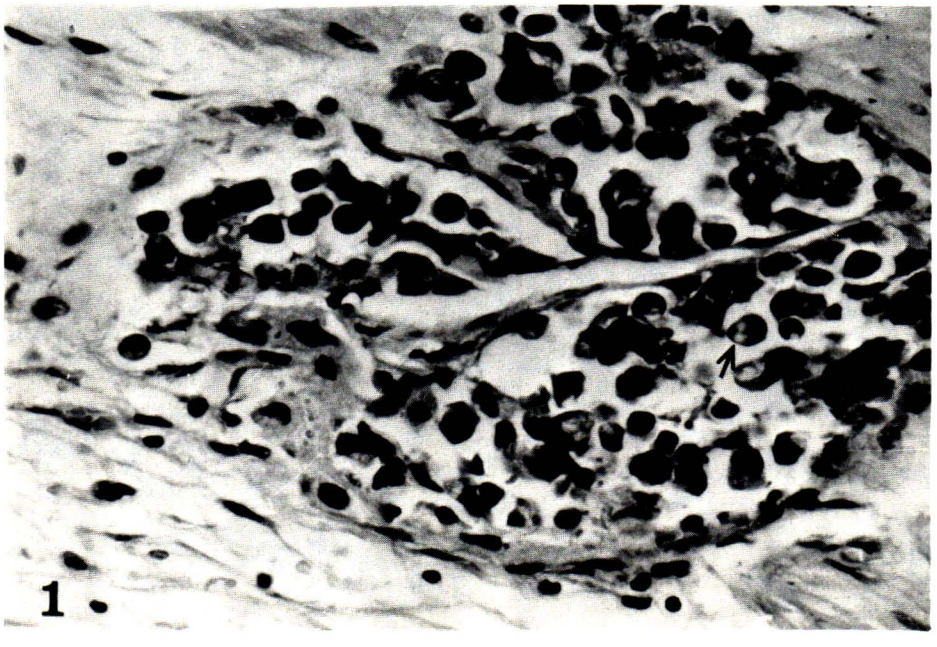

Figure 1 An illustration shows solid nest of poorly differentiated adenocarcinoma. An individual neoplastic cell reveals large hyperchromatic nucleus with vacuolated cytoplasm (arrow). H & E × 400

Figure 2 A picture shows well differentiated adenocarcinoma. Each focus exhibits lumen at the centre. H & E × 400

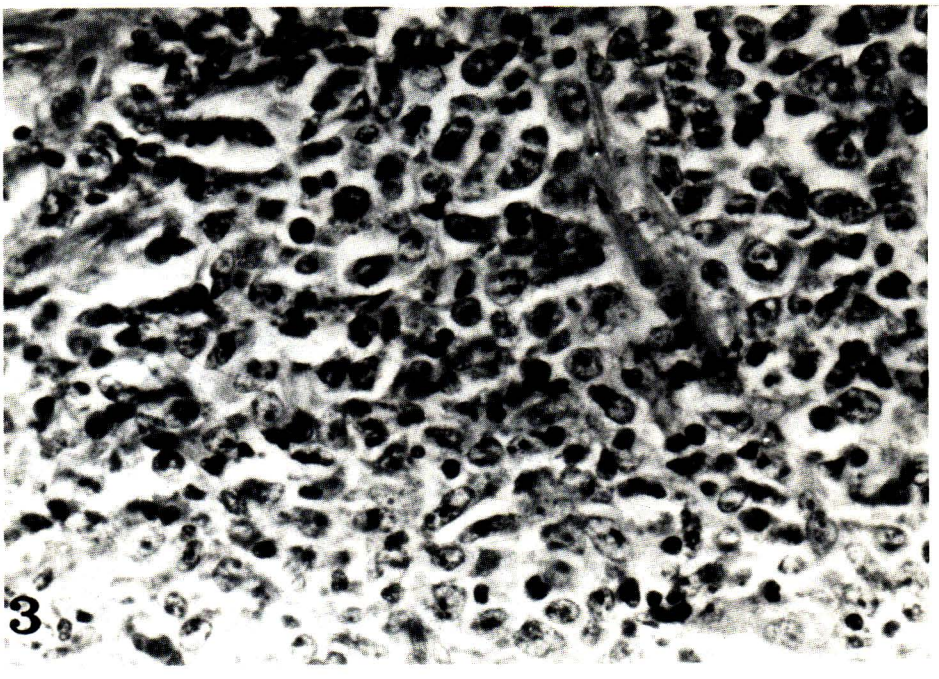

Figure 3 An illustration of malignant lymphoma discloses monotonous cellular tumor. Each cell has indistint cell membrane and scanty cytoplasm with large round or oval mucleus and coarse chromatin. H & E × 400

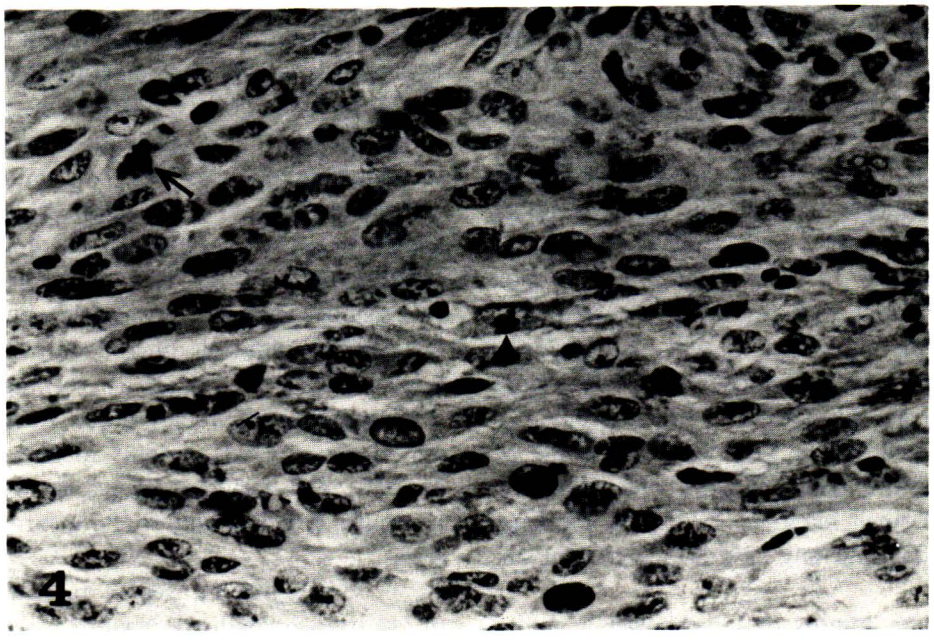

Figure 4 A picture of leiomyosarcoma shows the bundle of cellular spindle cells. Mitosis and abnormal mitosis are noted, arrow head and arrow. H & E × 400

Discussion

The most common malignant tumor of esophagus is squamous cell carcinoma; it is the neoplasma of old age particularly men.[6] Adenocarcinoma of this region is infrequent and if it is found in the lower portion, primary site in stomach should be considered. Leiomyosarcoma is occasionally observed and rhabdomyosarcoma is rare. Malignant lymphoma of esophagus is usually an extension from stomach or mediastinum. These malignant tumors of esophagus are rare in youth. In 48 cases of visceral squamous cell carcinoma in children, only one case of squamous cell carcinoma of esophagus is documented.[7] There is a case of leiomyosarcoma out of 35 cases in the patients younger than 30 years as well.[8] Some factors attribute to development of squamous cell carcinoma such as smoking for along time, it is associated with other unknown factors contributing to its rarity in the younger aged group. Absence of any malignancy of esophagus in our series is explained as previously mentioned as well.

In stomach, adenocarcinoma is the most common malignancy especially in men over 50 years. Lymphoma and leiomyosarcoma are in the next frequencies. During childhood, malignant tumors of stomach are rare. In spite of the rarity, lymphoma and soft tissue sarcoma are common.[8-10] Pathogenetic consideration on immunologic deficiency with evidence of histological thymic dysplasia is postulated on the rarity of carcinoma in youth.[9] There are 16 cases of adenocarcinoma and 3 cases of lymphoma in our series. Histologically, 13 out of 16 cases are poorly differentiated carcinoma. It plays an important role in association with delayed diagnosis contributing to the poor prognosis. Even in cases of well differentiated tumor, protracted period prior to diagnosis resulting in advanced stage and go along with ominous outcome. Three cases of malignant lymphoma, diffuse histiocytic type are observed with lymph node involvement at the time of operation. All of them manifested as giant rugae.

Malignant tumors of small bowel are rare in all aged group. No any malignancy is documented in series of 96 cases up to 30 years old excluding lymphoma and peri-ampullar carcinoma.[11] Ten cases of malignant lymphoma of small intestine in our series manifest chiefly with abdominal pain. The lesion confines to the jejunum a half of cases, 3 cases at the ileum and another two, small intestine are documented. Five cases have evidence of regional nodes involvement. Small bowel is the second most common location for the malignant lymphoma of the gastro-intestinal tract and usually

occurs during 4 to 7 decades.[12] But notable number is observed in childhood which is usually located at ileum and marked male preponderance which is in contrast to adult lymphoma. The prognosis is bad in infancy and childhood with mean survival of 13.7 months.[13] However the outcome is not predictable because the local or systemic involvement could not be speculated. Leiomyosarcoma of the small bowel is common in jejunum and ileum.[11,14] It is the most common location in G-I tract with descending in frequency in stomach and large intestine.[15] The majority of small intestinal leiomyosarcoma developes metastasis during the course of the disease and half of them died within 5 years. Carcinoma of duodenum is more frequent than the remaining portions of the small intestine. The peak incidence is in old age, thus no any case is observed in our series.

Malignant tumors of large bowel in adult, adenocarcinoma is the most common both in the large intestine itself and in the entired alimentary tract. The most frequent location is rectosigmoid colon with ascending colon and cecum in the next order.[16] Leiomyosarcoma is relatively rare comparing to the remaining portions of the G-I tract.[15] However in spite of its rarity, rectum is common anatomic location. The tumor is similar to adenocarcinoma, usually occuring in men between 5 to 6 decades.[14] Malignant lymphoma of alimentary tract is well known to be most common in the stomach with less frequent in the small bowel and large bowel respectively. The peak incidence is 4 to 7 decades.[12,17] In large bowel lymphoma it is slightly female preponderance.[12] Lymphoma of the intestine is also notably observed in the first and second decades. Cecum and rectum are noted in descending to small intestine regardless of aged group.[18] Excluding cecum and appendix, the prognosis is poor.[12,17] In the patient younger than 30 year old, adenocarcinoma is rare.[19] If it exists it is usually associated with familial polyposis and ulcerative colitis. However some of them occur denovo.[20] As in adult it is most common in recto-sigmoid area.[19] Abdominal pain, mass and distension are usual clinical presentation of the right and left colon in children.[20] While bleeding and apt to obstruction are observed in rectosigmoid lesion.[19] Approximately half of them exhibits histological mucoid and signet ring cell appearance.[19,21] High percentage of poorly differentiated adenocarcinoma including mucoid and signet ring cell variants in our series is noted as well. This factor associated with delay diagnosis in youth contributing to poor prognosis in our series.

Ninety-two cases of primary malignancy of G-I tract in youth are reported with brief reviewing on general knowledge concerning epidemiology. Our all data discloses slight male preponderant with frequency in the second decade. Abdominal pain was main clinical presentation in the small intestine and the colon excluding rectosigmoid area. Mucous bloody stool is the important feature in the latter. While malignancy of stomach exhibits obstruction and related signs and symptom. Limited to carcinoma of this system, number of cases with opposite degree of differentiation are nearly equal. It refleets to high frequency of poorly differentiated adenocarcinoma in youth. However duration prior to admission is rather short in both groups. Sothat that the outcome is not good as well.

Acknowledgement

The authors wish to thank Professor Samruay Shuangshoti for kindly reviewing the manuscript.

References

1. McGlashan N D. Oesophageal cancer and alcoholic spirits in central African. Gut 1969 Aug; 10(8) : 643-650
2. Burrell RJW, Roach W A, Shadwell A. Esophageal cancer in the bantu of the transkei associated with mineral deficiency in garden plants. J Natl Cancer Inst 1966 Feb; 36(2) : 201-209
3. Dungal N. The special problem in stomach cancer in Iceland : with particular reference to dietary factors. JAMA 1961 Nov 25 ; 178(8) : 789-798
4. Merliss R R. Talc-treated rice and Japanese stomach cancer. Science 1971 Sep 17;173 (4002) : 1141-1142
5. Haenszel W, Berg, J W, Segi M, Kurihara M, Locke F B. Large bowel cancer in Hawaiian Japanese. J Natl Cancer Inst 1973 Dec; 51(6): 1765-1779
6. Burgess H M, Baggenstoss A H, Moersch H A, Clagett O T. Carcinoma of the esophagus : a clinicopathologic study. Surg Clin North Am 1951 Aug ; 31 : 965-976

7. Moore C. Visceral squamous cancer in children. Pediatrics 1958 Apr; 21(4) : 573-581
8. Gray S W, Skandalakis J E, Shepard D. Collective review; smooth muscle tumors of the esophagus. Int Abstr Surg 1961 Sep ; 113(3) : 205-220
9. Siegel S E, Hays D M, Romansky F, Isaacs H. Carcinoma of Stomach in Childhood. Cancer 1976 Oct ; 38(4) : 1781-1784
10. Wurlizer F P, Mares A J, Issacs H jr, Landing B H, Wooley M. Smooth muscel tumors of the stomach in childhood and adolescence. J Pediatr Surg 1973 Jun 8(3) : 421-427
11. Wilson J M, Melvin D B, Gray G F, Thorbjarnarson B. Primary malignancy of the small bowel : a report of 96 cases and review of the literature. Ann Surg 1974 Aug ; 180(2) : 175-179
12. Lewin K J, Ranchod M, Dorfman R F, Lymphoma of the gastrointestinal tract : a study of 117 cases presenting with gastroinstinal disease. Cancer 1978 Aug ; 42(2) : 693-707
13. Mestal A L. Lymphosarcoma of the small intestine in infancy and childhood. Ann Surg 1959 Jan ; 149(1) : 87-94
14. Skwari O E, Dozois R R, Weiland L H, Beahrs O H. Leiomyosarcoma of the small and large bowel. Cancer 1978 Sep ; 42(3) : 1375-1384
15. Ranchod M, Kempson L. Smooth muscle tumors of the gastrointestinal tract and retroperitoneum : a pathologic analysis. Cancer 1977 Jan ; 39(1) : 255-262
16. Falterman K W, Hill C W, Markey J C, Fox J W, Cohn I Jr. Cancer of the colon, rectum and anus: a review of 2,313 cases. Cancer 1974 Sep ; 34 Suppl 3 : 951-959
17. Azzopardi J G, Menzies T. Primary malignant lymphoma of the alimentary tract. Br J Surg 1960 Oct ; 47(204) : 358-366
18. Wood D A. Tumors of the intestines. In Atlas of Tumor Pathology. Fasc. 22. Sect. 4. Armed Force Institute of Pathology. Washington D.C., 1967. 96-110
19. Hoerner M T. Carcinoma of the colon and rectum in persons under twenty years of age. Am J Surg 1958 Jul ; 96(1) : 47-53
20. Middelkamp J N, Haffner H. Carcinoma of colon in children. Pediatrics 1963 Oct; 32(4) : 558-571
21. Sessions R T, Riddell D H, Kaplan H J, Foster J H. Carcinoma of colon in the first two decades of life. Ann Surg 1965 Aug; 162(2) : 279-284