International Journal of
Clinical and Diagnostic Pathology

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A histopathological analysis of colorectal cancer

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Abstract
Background: Carcinoma of the colon or rectum is a common and lethal disease. The present study was conducted to assess histopathology of colorectal cancer.
Materials & Methods: The present study was conducted on 112 rectum specimens. Tumor invasion depth, surgical margin status, lymph vascular/perineal invasion, presence/absence of metastatic lymph nodes, neoadjuvant therapy, and regression rates were assessed.
Results: Out of 112 specimens, 64 were of males and 48 of females. There was mild treatment response in 21, moderate in 15, high in 14 and complete regression in 10 cases. Tumor type was adenocarcinoma in 76, mucinous adenocarcinoma in 23, malign melanoma in 6, signet ring cell carcinoma in 4, and gastrointestinal stromal tumor in 2 and endometriosis in 1 case.
Conclusion: Authors found that histopathology revealed that maximum cases were of adenocarcinoma followed by mucinous adenocarcinoma.

Keywords: Adenocarcinoma, colorectal cancer, histopathology

Introduction

Worldwide, colorectal carcinomas are the third most common carcinomas in men and the second most common carcinomas in women. A study conducted in 2014 reported that there are approximately 10 000 new cases of colon cancer and nearly 40000 new cases of rectal carcinoma annually in the United States. Deaths due to colorectal cancers account for approximately 9% of all cancer-related deaths. With changes in oncological treatments over the years, care should be taken to accurately perform pathological and clinical staging of these cases [1].

Carcinoma of the colon or rectum (colorectal cancer [CRC]) is a common and lethal disease. Approximately 145,600 new cases are diagnosed each year in the United States, of which 101,420 are colon and the remainder are rectal cancer [2]. Annually, approximately 51,020 Americans die of CRC, accounting for approximately 8 percent of all cancer deaths. Global, country-specific data on incidence and mortality are available from the World Health Organization (WHO) [3].

Surgical resection is the primary treatment modality for early stage CRC (stage I through III) and the most powerful tool for assessing prognosis following potentially curative surgery is pathologic analysis of the resected specimen. Although the parameters that determine pathologic stage are the strongest predictors of postoperative outcome, other clinical, molecular, and histologic features may influence prognosis independent of stage. Among patients with stage IV disease, prognosis is more closely tied to the location and extent of distant metastatic disease [4]. The present study was conducted to assess histopathology of colorectal cancer.

Materials & Methods

The present study was conducted to in the department of General pathology. It comprised of 112 rectum specimens. The study protocol was approved from institutional ethical committee.

Demographic data, etiology, and physiological and surgical parameters were collected from medical records. Tumor invasion depth, surgical margin status, lymphovascular/perineural invasion, presence/absence of metastatic lymph nodes, neoadjuvant therapy, and regression rates were assessed. When performing lymph node dissection, adipose tissue specimens were kept in alcohol overnight and were dissolved and solidified into adipose tissue components.

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Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table 1: Distribution of patients

Total- 112		
Gender	**Males**	**Females**
Number	64	48

Table I shows that out of 112 specimens, 64 were of males and 48 of females.

Table 2: Regression responses of neoadjuvant treated patients

Response	Number	P value
Mild treatment response	21	
Moderate treatment response	15	0.12
High treatment response	14	
Complete regression	10	

Table II, graph I shows that there was mild treatment response in 21, moderate in 15, high in 14 and complete regression in 10 cases.
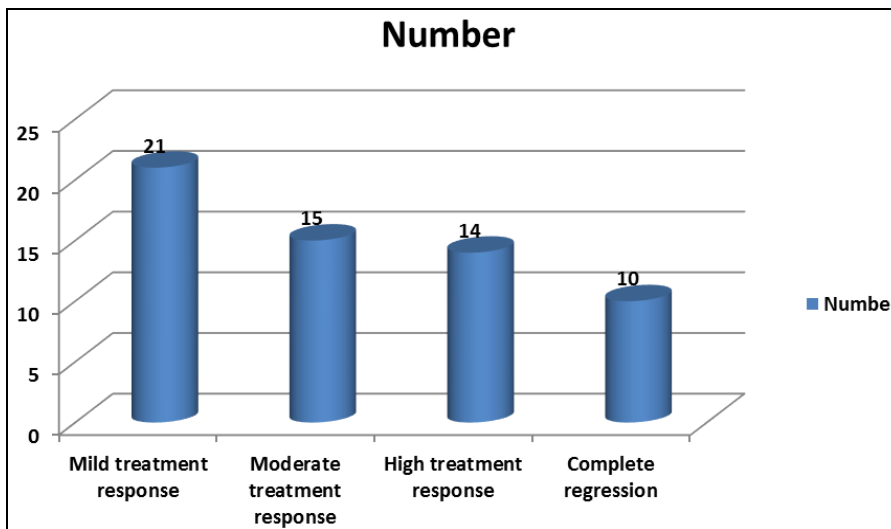

Graph 1: Regression responses of neoadjuvant treated patients

Table 3: Distribution of cases

Tumor type	Number	P value
Adenocarcinoma	76	
Mucinous Adenocarcinoma	23	
Malign melanoma	6	0.01
Signet ring cell carcinoma	4	
Gastrointesitnal stromal tumor	2	
Endometriosis	1	

Table III, graph II shows that tumor type was adenocarcinoma in 76, mucinous adenocarcinoma in 23, malign melanoma in 6, signet ring cell carcinoma in 4, gastrointestinal stromal tumor in 2 and endometriosis in 1 case.
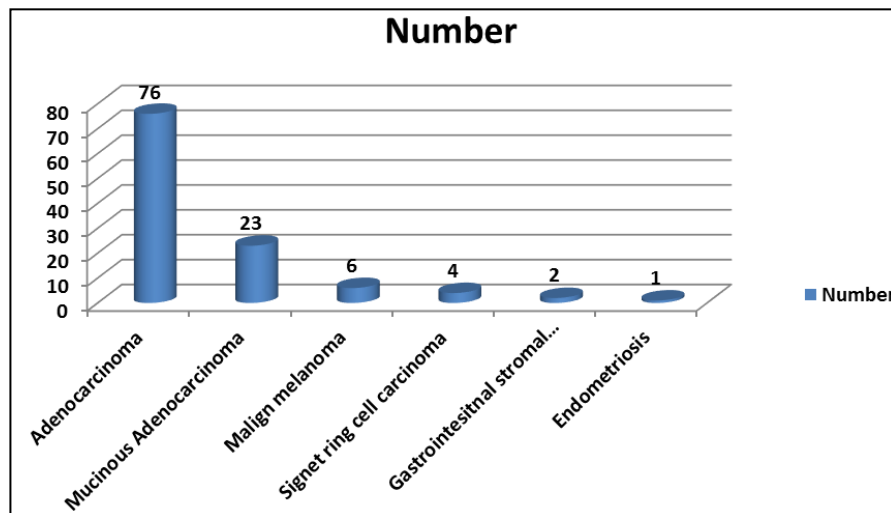
Graph 2: Distribution of cases

Discussion

Colorectal cancer (CRC) is one of the most common malignancies and usually ranks high in incidence and mortality among all malignancies in the Western world.[5] Carcinoma of the rectum and sigmoid is one of the most sites of gastrointestinal tract malignancy and accounts for 20% of all gastrointestinal malignancies. The age-adjusted incidence rates of CRCs in all the Indian cancer registries are very close to the lowest rates in the world [6].

Pathological examination of rectum specimens requires special attention for correctly evaluating many prognostically important factors. Careful pathological examination is extremely important with respect to tumor invasion depth, surgical margin status, presence of lymphatic/vascular/perineural invasion, presence/absence of metastatic lymph nodes, presence of neoadjuvant therapy, and regression rates [7]. The present study was conducted to assess histopathology of colorectal cancer.

In present study, out of 112 specimens, 64 were of males and 48 of females. There was mild treatment response in 21, moderate in 15, high in 14 and complete regression in 10 cases. A et al. [8] found that of the 173 specimens, 15 (8.7%) were APR and 158 (91.3%) were LAR specimens. Ninety-four patients (54.3%) were males and 79 patients (45.7%) were females. The mean age of the patients was 63.5 years (range 26–90 years). In the histopathological examination, malignant neoplasm was detected in 172 of the cases (99.4%) and benign endometriosis was detected in 1 of the cases (0.6%). There were 151 (87.2%), 8 (4.6%), 5 (2.9%), 1 (0.6%), 1 (0.6%), 1 (0.6%), 1 (0.6%), 1 (0.6%), and 4 (2.3%) patients with adenocarcinoma, mucinous adeno-carcinoma, intramucosal adenocarcinoma in the setting of a high-grade tubulovillous adenoma, synchronous colon/prostate adenocarcinoma, malignant melanoma, signet ring cell carcinoma, gastrointestinal stromal tumor, endometriosis, and adenocarcinoma diagnosed by the examination of colonoscopic biopsy specimens that showed complete regression with neoadjuvant therapy, respectively.

In present study tumor type was adenocarcinoma in 76, mucinous adenocarcinoma in 23, malign melanoma in 6, signet ring cell carcinoma in 4, gastrointesitnal stromal tumor in 2 and endometriosis in 1 case. Singla et al. [9] found that rectum was the most common site of involvement followed by the recto-sigmoid involvement. Metastasis was observed in 5 cases out of the 31 malignant cases. Five of the 7 cases were correctly staged as T1 & T2 lesions on CT having a sensitivity of 83.3%, specificity of 92%, and positive predictive value of 71.4% and a negative predictive value of 95.8% in the diagnosis of T1 and T2 lesions. 15 of the 16 cases were correctly staged as T3 lesions. CT had a sensitivity of 88.2%, specificity of 93.8%, and positive predictive value of 93.8% and a negative predictive value of 86.7% in the diagnosis of T3 lesions. All the 8 cases were correctly staged as T4 lesions. CT had a sensitivity of 100%, specificity of 100%, and positive predictive value of 100% and a negative predictive value of 100% in the diagnosis of T4 lesions.

A study done by Pereira et al. [10] described that pericolic fat stranding is commonly seen in inflammatory conditions of the colon. Adjacent organ infiltration was seen in 8 cases (25.8% of total cases); however, the rest of the 23 cases did not show any involvement of viscera which means that the rate of detection of infiltration was 100%.

Conclusion

Authors found that histopathology revealed that maximum cases were of adenocarcinoma followed by mucinous adenocarcinoma.

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