Original Research Article

Histopathological spectrum of colorectal carcinomas

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Abstract

Introduction: Colorectal carcinomas are global oncologic problem faced by medical fraternity as it is the third most common carcinoma in men after lung and prostate carcinomas also second in women after breast carcinoma worldwide. 1998 to 2003, and the death rate decreased from 2.8% annually over the period 2001 to 2003. A great majority (98%) of all carcinomas in the colorectum are adenocarcinomas. The cause and pathogenesis of colorectal carcinomas are related to both environmental and genetic factors. Both gross as well as histopathological typing helps in definitive diagnosis and further management of the patient.

Materials and Methods: This one year retrospective study included forty-three (43) cases of colorectal carcinomas. All the resected specimens received in the laboratory were immediately fixed in 10% formalin for at least 24 hours. Gross features of specimen were noted and multiple representative sections were taken for routine processing. After detailed study of sections under the light microscope the final diagnosis was given along with disease stage (Dukes classification). The patient details like age, sex, clinical diagnosis were obtained from the requisition forms that were sent along with the specimen.

Results: There were total of forty-three (43) patients of colorectal carcinomas during the study one year. Male to female ratio was 1.15:1. Majority of the patients belonged to the age group of 58-67 years. The most common malignancy was adenocarcinoma followed by mucinous carcinoma and neuroendocrine carcinoma. The most common anatomical site involved was rectum.

Conclusion: This study concludes that colorectal carcinomas are more common in 5th and 6th decade of life with slight male preponderance. The most common malignant lesion being moderately differentiated adenocarcinomas. The most common location being rectum with highest incidence of Dukes stage B. The histopathological examination remains the gold standard for the diagnosis and further management.
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2. Materials and Methods

This one year retrospective study included forty-three (43) cases of colorectal carcinomas diagnosed between January 2017 and December 2017. All the resected specimens received in the laboratory were immediately fixed in 10% formalin for at least 24 hours. Gross features of specimen were noted and multiple representative sections were taken for routine processing. Paraffin embedded of sections of 4 micrometer were taken and stained with Hematoxylin and eosin (H&E). After detailed study of sections under the light microscope the final diagnosis was given along with disease stage (Dukes classification). The patient details like age, sex, clinical diagnosis were obtained from the requisition forms that were sent along with the specimen. The location of the tumor was categorized as ascending, transverse, descending, sigmoid colon and rectum.

3. Results

There were total of forty-three (43) patients of colorectal carcinomas during the study one year. It included 23(53.48%) male and 20 (46.52%) female patients with a male to female ratio of 1.15:1. (Table 1)

Majority of the patients, 16(37.21%) belonged to the age group of 58-67 years with the youngest being 18 years and oldest being 81 years old.

The most common malignancy was adenocarcinoma 37(86.04%), followed by mucinous carcinoma and neuroendocrine carcinoma of 2(4.65%) in each category. There were 1(2.33%) each case of malignant melanoma and signet ring cell carcinoma. (Table 2) The histological differentiation of adenocarcinomas included 29 (78.38%) moderate and 8 (21.62 %) poor differentiated carcinomas. (Table 2)

The most common anatomical site involved was rectum 18(41.86%) followed by ascending colon 9(20.94%), sigmoid colon 8 (18.60%), descending colon 4(9.30%), and 2(4.65%) each of transverse colon and cecum respectively. (Table 3) The lymphovascular invasion (LVI), perineural invasion (PNI) and tumor budding was seen in 17(39.53%), 9(20.93%) and 26(60.46%) cases respectively. (Table 4)

There were 25 cases (58.14%) in stage B (with 7 cases in B1 and 18 cases in B2) and remaining 18 cases (41.86%) in stage C (with 14 cases in C1 and 4 cases in C2). (Table 5)

4. Discussion

The incidence of colorectal carcinomas are lower in India, being 5.9 and 5.3 per 100,000 in males and females respectively as compared to 32.9 and 24.4 per 100,000 in US. 1,12 Among the Asian population, Singaporeans have higher incidence of colorectal carcinomas than Malays and Indians. 1,13

In the present study, the incidence of colorectal carcinomas was highest (37.21%) between the age group of 58-67 years which was comparable to the study done by Sharma P et al 3 which was 33.8% of cases. A highest proportion of cases were seen in males as compared to females with M:F ratio of 1.15:1 and studies conducted by Rajesh S et al 1 , Kudale SS et al 14 showed similar results. The most common anatomical site being rectum (41.86%) followed by ascending colon (20.93%) and sigmoid colon (18.60%). Similar results were obtained by Rasool M et al 15, Sharma P et al 3 and Laishram RS et al. 1
### Table 1: Age and sex incidence of colorectal carcinomas

| Age groups | F | M | Total | Percentage |
|------------|---|---|-------|------------|
| 18-27      | 1 | 2 | 3     | 6.98       |
| 28-37      | 2 | 2 | 4     | 9.3        |
| 38-47      | 3 | 4 | 7     | 16.3       |
| 48-57      | 4 | 5 | 9     | 20.93      |
| 58-67      | 7 | 9 | 16    | 37.21      |
| 68-77      | 2 | 1 | 3     | 6.98       |
| 78-87      | 1 | - | 1     | 2.3        |
| Total      | 20| 23| 43    | 100        |

### Table 2: Incidence of histological type of carcinoma

| Diagnosis                          | Number | Percentage |
|------------------------------------|--------|------------|
| Adenocarcinoma                     | 37     | 86.04      |
| Malignant Melanoma                 | 1      | 2.33       |
| Mucinous Adenocarcinoma            | 2      | 4.65       |
| Neuroendocrine carcinoma           | 2      | 4.65       |
| Signet ring cell carcinoma         | 1      | 2.33       |
| Total                              | 43     | 100        |

### Table 3: Anatomical site distribution

| Diagnosis/Site                  | Ascending colon | Caecum | Descending colon | Rectum | Sigmoid colon | Transverse colon | Total |
|--------------------------------|-----------------|--------|------------------|--------|--------------|-----------------|-------|
| Adenocarcinoma                 | 6               | 2      | 4                | 16     | 7            | 2               | 37    |
| Malignant Melanoma             | -               | -      | -                | 1      | -            | -               | 1     |
| Mucinous Adenocarcinoma        | -               | -      | -                | 1      | 1            | -               | 2     |
| Neuroendocrine carcinoma       | 2               | -      | -                | -      | -            | -               | 2     |
| Signet ring cell carcinoma     | 1               | -      | -                | -      | -            | -               | 1     |
| Total                          | 9               | 2      | 4                | 18     | 8            | 2               | 43    |

### Table 4: Incidence of LVI, PNI and Tumor budding

| Diagnosis                          | LVI | Present | PNI | Present | Tumor Budding | Absent | Present |
|------------------------------------|-----|---------|-----|---------|---------------|--------|---------|
|                                   | Absent |        | Absent |        |               |        |         |
| Adenocarcinoma                     | 23   | 14      | 30   | 7       | 15            | 22     |
| Malignant Melanoma                 | -    | 1       | 1    | -       | -             | 1      |
| Mucinous Adenocarcinoma            | 2    | -       | 2    | -       | -             | 2      |
| Neuroendocrine carcinoma           | 1    | 1       | 1    | 1       | 2             | -      |
| Signet ring cell carcinoma         | -    | 1       | -    | 1       | -             | 1      |
| Total                              | 26   | 17      | 34   | 9       | 17            | 26     |
| Grand Total                        | 43   | 43      | 43   | 43      | 43            | 43     |

### Table 5: Distribution of Dukes staging

| Modified Duke's | Number | Percentage |
|-----------------|--------|------------|
| Stage A         | 0      | 0          |
| Stage B         | B1 B2  | 7          | 58.14    |
|                 |        | 18         |          |
| Stage C         | C1 C2  | 14         | 41.86    |
|                 |        | 4          |          |
| Total           | 43     | 100        |          |
Adenocarcinoma was the most common histological variant (86.04%) which was also consistent with the studies done by Kudale SS et al.\textsuperscript{14} and Shah N et al.\textsuperscript{16} There was one case (2.32%) of malignant melanoma of rectum in a 41 year old male. Nicholson AG et al.\textsuperscript{17}, in their study found that primary malignant melanomas of rectum are rare. High incidence of moderately differentiated carcinomas (78.38%) was observed in the present study, similar to the studies done by Leishram RS et al.\textsuperscript{1} and Uma L et al.\textsuperscript{6}

Lymphovascular invasion, perineural invasion and tumor budding was seen in 39.53%, 20.93% and 60.46% of cases respectively. Dukes B stage was the most common stage of carcinomas, which is comparable to the study conducted by Laishram RS et al.\textsuperscript{1} and Nannavati MG et al.\textsuperscript{18} and Sharma P et al.\textsuperscript{3}

5. Conclusion

This study concludes that colorectal carcinomas are more common in 5\textsuperscript{th} and 6\textsuperscript{th} decade of life with slight male preponderance. The most common malignant lesion being moderately differentiated adenocarcinomas. The most common location being rectum with highest incidence of Dukes stage B. The histopathological examination remains the gold standard for the diagnosis and further management.

6. Conflict of Interest

None.

7. Source of Funding

None.

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