FREQUENCY AND TYPE OF DYSPLASIA IN ULCERATIVE COLITIS IN COLORECTAL BIOPSIES

Shagufta Iram, Muhammad Tahir Khadim, Syed Salman Ali, Unaiza Jamil, Kiran Muntaz
Combined Military Hospital Multan/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To determine the frequency and type of dysplasia in ulcerative colitis in colorectal biopsies.

Study Design: Cross sectional analytical study.

Place and Duration of Study: Department of Histopathology, Combined Military Hospital Multan, from Oct 2016 to Apr 2017.

Methodology: A total of 68 cases of ulcerative colitis were included in the study. Data was analyzed by using SPSS version 18. Variables like age and duration of disease gender and categories of dysplasia (low grade and high grade) were calculated. Chi-square test was applied.

Results: The age of patients ranged from 20 to 70 years with a mean age of 40.64 ± 13.9 years. In our study, most of the patients 22 (32%) belong to 21-30 years. Out of 68 cases of ulcerative colitis, 38 (56%) cases were diagnosed as negative for dysplasia, 20 cases (29%) were diagnosed as positive for low grade dysplasia and 10 (15%) cases were diagnosed as positive for high grade dysplasia.

Conclusion: The frequency of dysplasia in ulcerative colitis varies in different countries of world. A significant number of cases of ulcerative colitis in our study showed dysplastic changes. Surveillance colonoscopy and detection of dysplasia at early stages is effective in reducing mortality in ulcerative colitis.

Keywords: Colorectal biopsies, Dysplasia, Ulcerative colitis.
Dysplasia in Ulcerative Colitis

October 2016 to April 2017, after the approval of ethical committee. Sample size was calculated using WHO sample size calculator with confidence level 95%, anticipated population proportion 17.2% and absolute precision 9%. A total of 68 colorectal biopsies of ulcerative colitis were selected by non-probability, consecutive sampling technique, between 20-70 years of age, of both genders, after taking informed consent. Poorly fixed specimens, specimens with scanty tissue and metastatic carcinoma were not included in the study. The specimens were fixed in 10% buffered formalin, grossed and stained with Hematoxylin and Eosin to examine morphology. Biopsy specimens were examined for dysplasia and classified into low grade and high grade dysplasia. Special stains like Periodic Acid Schiff were performed whenever required. In order to minimize the bias, all results were verified by the supervisor having more than 15 years of experience. All the data were entered into the predesigned performa.

Data was analyzed by using SPSS version 18. The quantitative variables like age and duration of disease were presented by calculating mean and standard deviation. The qualitative variables like gender and categories of dysplasia (low grade and high grade) were presented by calculating frequency and percentages. Post stratification, chi-square and Fisher exact test were applied. p-value less than or equal to 0.05 was taken as significant.

RESULTS

During the study, a total of 68 colorectal biopsies of ulcerative colitis patients were included. Distribution of cases according to age groups, gender, disease duration and categories of dysplasia was summarized in table-I & fig-1. A significant statistical association was seen between disease duration and dysplasia, p-value being 0.001.

The age of patients ranged from 20 to 70 years with a mean age of 40.64 ± 13.95 years. In our study, most of the patients 22 (32%) belonged to age group 21-30 years. There were 50 (74%) males and 18 (26%) females with a male to female ratio of 3:1.

Table: Distribution of cases according to age, gender and disease duration.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cases (n)</th>
<th>Percentage (%)</th>
<th>Ulcerative Colitis</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Negative for dysplasia</td>
<td>Low grade dysplasia</td>
</tr>
<tr>
<td>Age Groups</td>
<td></td>
<td></td>
<td>22</td>
<td>32.4</td>
</tr>
<tr>
<td>21-30</td>
<td>22</td>
<td>32.4</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>31-40</td>
<td>20</td>
<td>29.4</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>41-50</td>
<td>9</td>
<td>13.2</td>
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<td>51-60</td>
<td>10</td>
<td>14.7</td>
<td>4</td>
<td>2</td>
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<td>61-70</td>
<td>7</td>
<td>10.3</td>
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<td>2</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>50</td>
<td>73.5</td>
</tr>
<tr>
<td>Male</td>
<td>50</td>
<td>73.5</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Female</td>
<td>18</td>
<td>26.5</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Disease Duration</td>
<td></td>
<td></td>
<td>27</td>
<td>39.7</td>
</tr>
<tr>
<td>&lt;8 years</td>
<td>27</td>
<td>39.7</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>&gt;8 years</td>
<td>41</td>
<td>60.3</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.091</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Chi-square test applied.

Figure-1: Distribution of dysplasia in ulcerative colitis.

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Out of 68 cases, 27 cases (40%) had duration of less than 8 years and 41 cases (60%) had duration of more than 8 years. The mean disease duration was 1.60 ± 0.49 years.

Out of 68 cases of ulcerative colitis, 38 (56%) cases were diagnosed as negative for dysplasia, 20 cases (29%) were diagnosed as positive for low grade dysplasia, 10 (15%) cases were diagnosed as positive for high grade dysplasia.

**DISCUSSION**

Ulcerative colitis has strong association with colorectal carcinoma (UC-CRC). UC-CRC patients are younger and have frequent multiple cancerous lesions and show signet and mucinous ring cell carcinomas. Risk factors for colorectal carcinomas include younger age of patients, longer duration of disease, greater anatomical extent of colon, the severity of inflammation and presence of primary sclerosing cholangitis. Colorectal cancer is the most common malignancy all over the world. It is the second most common cancer among females and third most common cancer in males.

Dysplasia in ulcerative colitis is classified into negative for dysplasia, indefinite for dysplasia, low grade dysplasia and high grade dysplasia. In low grade dysplasia, there is nuclear hyperchromasia and basilar orientation of nuclei. In high grade dysplasia, there are pleomorphic and hyperchromatic nuclei with luminal orientation of nuclei.

The implications for patient management are to continue regular follow-up for negative for dysplasia and indefinite for dysplasia, to institute short-term follow-up for low grade dysplasia and to consider colectomy for high grade dysplasia following confirmation of the diagnosis.

A prospective study was performed in India in ulcerative colitis patients at high risk of colorectal dysplasia by magnifying chromocolonoscopy. The study indicated 29 (70.7%) out of 41 eligible patients (a median age of 46yrs) having clinical symptoms for the last 10 years, underwent colonoscopy. Out of 29, sixteen had extensive colitis. Out of these 16 cases, low grade dysplasia was seen in 5 patients (17.2%) and high grade dysplasia was seen in 3 (10.3%). Only one out of 3 cases of high grade dysplasia, one underwent surgery for adenocarcinoma.

In another study by Murphy and Kalkbrenner, 329 patients (15%) out of 2130 patients were found, having at least 1 focus of dysplasia preoperatively. The association of chronic ulcerative colitis with low grade dysplasia and high grade dysplasia in surgical specimens was 2% and 3% respectively.

The mean age in our study was 40.64 ± 13.95 years, which was in concordance with a study carried out by Murphy et al, mean age in this study was 49.7%. The peak age group in our study was 21-30 years. It was comparable to study carried out in Egypt by Sandouk et al in which most of the patients were young. Majority of the patients in our study were males as seen in

![Figure-2: Photomicrographs showing Ulcerative Colitis with a. Negative for dysplasia b. Low grade dysplasia c. High grade dysplasia.](image-url)
Dysplasia in Ulcerative Colitis

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

REFERENCES


Studies conducted by Murphy et al⁶, and Watanabe et al¹. However, in the study conducted by Kim et al², majority were females.

In our study low grade dysplasia was seen in 29% cases and high grade dysplasia is seen in 15% cases. 56% cases were diagnosed as negative for dysplasia. While in study carried by Murphy et al⁶, low grade dysplasia is seen in 2% cases and high grade dysplasia in 3% cases which indicates high incidence of dysplasia in our population.

In a study carried out by Fumery et al¹³, 1 patient (2%) had low grade dysplasia and high grade dysplasia was also in 1 case (2%). However, study conducted by Katsanos et al¹⁴, dysplasia was seen in 69 cases (9.4%) in association with Ulcerative colitis. The study by Kekilli et al¹⁵, showed low incidence of dysplasia in ulcerative colitis patients. Colorectal cancer was found in only 3 cases (1.1%) among 275 ulcerative colitis patients. Jess et al¹⁶ showed 29 cases (4%) of low grade dysplasia. However, low grade and high grade dysplasia was 8.5% in a study carried out by Rozen et al and Rosenstock et al¹⁷,¹⁸.

Relatively less is known about the development of dysplasia in the Asian populations, particularly Pakistani population. The results of this study will help in establishing the relationship between ulcerative colitis and dysplasia.

CONCLUSION

Endoscopic surveillance should be highly recommended in chronic ulcerative colitis for detection of dysplasia so that early management should be done to prevent morbidity and mortality from colorectal carcinoma. Moreover correlation between genetic changes and clinicopathologic features will also help in future to develop new treatment plans. International and regional collaboration is necessary to reach ideal public awareness.