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Rectal Non-Hodgkin's Lymphoma: A Clinicopathologic Study and Review

Cary A. Gottlieb, MD,* Eyal Meiri, MD,+ and Koichi M. Maeda, MD*

A total of 11 patients with lymphomatous involvement of the rectum were seen at Henry Ford Hospital between 1964 and 1987. Eight of these patients had primary rectal lymphoma and three had secondary rectal lymphoma. These patients' clinical presentation and course as well as pathological findings are described and compared with cases previously reported. As identified in ours and others' series, rectal lymphomas are associated with the acquired immunodeficiency syndrome and tend to have a B-cell phenotype. (Henry Ford Hosp Med J 1990;38:255-8)

While non-Hodgkin's lymphoma (NHL) presenting in the gastrointestinal (GI) tract is a common site of extranodal lymphomas, it is still somewhat unusual, accounting for only 4.6% to 8.7% of all NHL (1-6). Rectal lymphomas represent a small subset of GI lymphomas (0.8% to 18.5%) (2,3,7,8) and of all rectal malignancies (0.2% to 1.3%) (7,9,10).

The following report reviews our institution's experience with this neoplasm. Clinical and pathological features of eight patients with primary rectal lymphomas and three patients with secondary rectal lymphomas are described and the pertinent literature reviewed.

Materials and Methods

Patients

All patients with lymphomatous involvement of the rectum seen at Henry Ford Hospital between 1964 and 1987 were included in this series. Patients were divided into two groups: primary rectal lymphoma or secondary rectal lymphoma. Using the criteria of Herrmann et al (5) and Lewin et al (6), the patient with primary GI lymphoma is one who has no history of lymphoma but presents with symptoms related to the GI tract or with an initial lesion discovered in the GI tract. We adapted these criteria as follows: A rectal lymphoma was considered primary if it caused symptoms that led to the diagnosis of lymphoma, or if a previously healthy person had an asymptomatic lesion diagnosed as lymphoma on biopsy. Lymphomas that did not meet these criteria were classified as secondary.

Clinical data

Clinical, gross, and radiographic features including age at diagnosis, sex, presenting symptoms, presence of B symptoms (night sweats, weight loss, or fever), duration of longest symptoms, gross description of the lesion at proctoscopy or sigmoidoscopy, lesion distance from the anus, presence and location of adenopathy, and radiographic studies at presentation were retrieved. Each patient's clinical course was analyzed according to clinical stage at diagnosis using the Ann Arbor staging system (11), treatment, site of recurrence (if any), current stage or stage at time of death, survival time, and unique features.

Tissue

All tissue was fixed in 10% buffered formalin prior to paraffin embedding. Hematoxylin-eosin-stained sections were reviewed and classified according to the International Working Formulation (12).

Monoclonal antibodies primarily reactive with B cells (L26/CD20 and 4KB5) and T cells (UCHL1 and MT1) in paraffin-embedded, formalin-fixed tissue were utilized to phenotype seven of the rectal lymphomas (13,14). A standard avidin-biotin complex immunoperoxidase technique was used to detect antibody binding (15). B-cell lineage was defined as a majority of large or small cells being L26 and/or 4KB5 positive, with MT1 and UCHL1 being negative. T-cell lineage was defined as a majority of large or small cells with MT1 and/or UCHL1 being positive, with L26 and 4KB5 being negative. A mixed T- and B-cell lineage was defined as having either or both of the B-cell markers and either or both of the T-cell markers identifying the same population of large or small cells. A null-cell lineage was defined as negative staining with all cell markers.

Results

Clinical presentation

Of the 11 patients found to have rectal involvement with lymphoma, eight patients fulfilled the criteria for primary rectal lymphoma and three had secondary involvement (Table). The
### Table

Clinical Data, Pathological Diagnosis, Treatment, and Survival of Patients with Primary or Secondary Rectal Lymphoma

<table>
<thead>
<tr>
<th>Case No/Age</th>
<th>Year Presented</th>
<th>Pathological Diagnosis</th>
<th>Clinical Stage</th>
<th>Treatment</th>
<th>Status</th>
<th>Survival (months)</th>
<th>Pertinent Clinical Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Rectal Lymphoma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/53/M</td>
<td>1965</td>
<td>Follicular small cleaved cell</td>
<td>Low</td>
<td>I_E</td>
<td>XRT</td>
<td>Alive</td>
<td>&gt;271</td>
</tr>
<tr>
<td>2/45/M</td>
<td>1966</td>
<td>Diffuse large cell</td>
<td>Inter</td>
<td>III_E</td>
<td>NM</td>
<td>Dead</td>
<td>45</td>
</tr>
<tr>
<td>3/52/M</td>
<td>1967</td>
<td>Diffuse small cleaved cell</td>
<td>Inter</td>
<td>III_E</td>
<td>COP</td>
<td>Dead</td>
<td>24</td>
</tr>
<tr>
<td>4/72/M</td>
<td>1964</td>
<td>Diffuse small cleaved cell</td>
<td>Inter</td>
<td>IV</td>
<td></td>
<td>Dead</td>
<td>0</td>
</tr>
<tr>
<td>5/43/M</td>
<td>1986</td>
<td>Diffuse large cell</td>
<td>Inter</td>
<td>IV_B</td>
<td>ProMACE &amp; CytaBOM COP-BIAM</td>
<td>Dead</td>
<td>5</td>
</tr>
<tr>
<td>6/60/M</td>
<td>1985</td>
<td>Immunoblastic</td>
<td>High</td>
<td>III_E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/71/M</td>
<td>1985</td>
<td>Small lymphocytic Diffuse large cell</td>
<td>Low</td>
<td>II_E</td>
<td>COP</td>
<td>Alive</td>
<td>&gt;2</td>
</tr>
<tr>
<td>Secondary Rectal Lymphoma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/76/M</td>
<td>1968</td>
<td>Follicular small cleaved cell</td>
<td>Low</td>
<td>III_E</td>
<td></td>
<td></td>
<td>72</td>
</tr>
<tr>
<td>10/73/M</td>
<td>1972</td>
<td>Diffuse large cell</td>
<td>Inter</td>
<td>III_E</td>
<td>XRT &amp; CP</td>
<td>Dead</td>
<td>0</td>
</tr>
</tbody>
</table>

Drug abbreviations: A = doxorubicin; B and Bl = bleomycin; C = cyclophosphamide; Cyta = cytarabine; E = etoposide; H = hydroxydaunomycin; M = methotrexate; NM = nitrogen mustard; O = vincristine; P and Pro = prednisone.

The average age of onset was 57 years for patients with primary rectal lymphoma and 77 years for those with secondary involvement. All patients, except one with secondary involvement, were male. The most frequent presenting symptoms were hematochezia (five of 11 patients) and changes in bowel habits (three patients). B symptoms were not uncommon (four of 11 patients). Duration of rectal symptoms varied from 2 weeks to 7 years, with a median of 8 months. Two of the eight patients with primary rectal lymphoma were diagnosed as having the acquired immunodeficiency syndrome (AIDS) prior to developing rectal lymphoma.

Palpable adenopathy was common and in several cases extensive. Four patients (cases 2, 3, 6, and 10) had palpable adenopathy on both sides of the diaphragm. Only four patients (cases 1, 8, 9, and 11) lacked adenopathy.

Proctoscopy or sigmoidoscopy was performed on all patients. Grossly, the examining physicians described a variety of appearances ranging from friable polypoid (nodular) masses to "large, prolapsed, necrotic, bleeding hemorrhoids." Lymphoma distance from the anus was described from perianal to the rectosigmoid junction.

Radiologic studies varied in accordance with available techniques at the time of diagnosis. Seven patients (cases 1-4, 7, 9, and 11) had barium enemas which disclosed a range of findings from negative (cases 1 and 9) to discovery of a 6 cm rectal mass (case 11). Pelvic and abdominal computed tomography was done in four patients (cases 5, 6, 8, and 11). Only one patient (case 6) had sole rectal involvement (a large rectal mass extending to the prostate). The other three patients had rectal masses with variable amounts of pelvic, mesenteric, periaortic, and perirectal lymphadenopathy.

Lymphoma was suspected in three of the 11 cases. Carcinoma was the more common clinical diagnosis.

Primary rectal lymphoma often indicates extensive disease at diagnosis. Only one patient had stage IE disease, which eventually progressed to stage III_E. Of those with secondary involvement, two had stage II_E and one had stage IE disease prior to rectal involvement.

### Pathology

Each rectal lymphoma was classified using the Working Formulation (Table). Of the eight primary rectal lymphomas, two were low grade. The rest were high grade. There were no intermediate grade. All of the secondary involvement were high grade. The exceptions included the one who presented with primary involvement.
were low grade, five were intermediate grade, and one was high
grade. The three secondary rectal lymphomas were equally di-
vided among the low, intermediate, and high grade classifica-
tions.

Immunohistologic studies—Five primary and three second-
ary rectal lymphomas were analyzed. In the primary rectal lympho-
ma group, two B-cell and three null-cell lymphomas were
found. All three secondary rectal lymphomas were of B-cell lin-
eage. The group with null-cell primary rectal lymphomas in-
cluded the two patients with AIDS.

Treatment and survival
The average survival rate of our 11 patients was 40 months
(range 0 to 271 months, median 11 months). All three of the sur-
viving patients had primary rectal lymphoma.

Review
We found clinical data on 18 previously reported cases of pr-
imary rectal lymphoma (16-21). Of this group, ten patients were
male and the average age was 54 years (range 10 to 84 years).
AIDS was either previously diagnosed or highly suspected in
six patients (all younger men with a history of homosexuality
and/or intravenous drug abuse). Three patients had low grade,
seven had intermediate grade, and eight had high grade lymph-
omas. The majority of high grade neoplasms occurred in the
known or highly suspected cases of AIDS. Of the 18 primary
rectal lymphomas, 12 (66%) were classified as stage I\textsubscript{g}, one as
stage I\textsubscript{II}, and five as stage I\textsubscript{IV}. In the reports which gave im-
munohistologic analysis, only B-cell lymphomas were found
(17-25).

Discussion
Our experience as well as the small number of cases previ-
ously reported indicates that rectal lymphomas are a rare malig-
nancy (7,9,10). The age of onset of rectal lymphoma is generally
consistent with that of other NHL, although more recent cases
(both in our patient population and in the literature) show an bi-
modal age distribution. The early age peak is primarily due
to AIDS-related rectal lymphomas. The two reports that first
noted this association were published at the start of the AIDS
epidemic (17,22). Although the human immunodeficiency virus
(HIV) was not identified specifically in the six patients pre-
sented by Burkes et al (17) and Lee et al (22), these patients most
likely had the disease. Our experience adds two more AIDS-
associated rectal lymphomas to the literature. Others have also
reported this association (23). Whether rectal lymphoma in
AIDS patients is secondary to anal infection in traumatized areas,
to mucosal lymphophatosis of HIV-infected lymphoma
precursor cells, or to other mechanisms is not yet known.

The presentation of rectal lymphomas appears similar to that
of other anorectal neoplasms. There does not appear to be any
historical, clinical, or gross examination finding that allows ac-
curate diagnosis, except a strong clinical suspicion (i.e., in pa-
patients with AIDS) or the presence of adenopathy.

In our series, rectal lymphoma was a manifestation of ad-
vanced lymphomatous disease (only one of eight patients had
stage I\textsubscript{E} disease). This differs markedly from the report by
Dawson et al (16) who classified lymphomas as “low grade” in
patients whose disease was predominantly localized. In this
respect, our series is also different from that of Vanden-Heule et al
(7). In their series of eight cases of rectal lymphomas, four were
intermediate grade and four were high grade primary malig-
nancies. These authors noted that patients with diffuse non-cleaved
follicular center cell ( FCC) Burkitt-like lymphomas (small non-
cleaved cell in the Working Formulation) had localized disease,
whereas those with diffuse small cleaved FCC ( diffuse small
cleaved cell in the Working Formulation) had systemic disease.
Our series also differs from that of Perry et al (9) in which the
predominant histology was diffuse poorly differentiated lym-
phocytic lymphoma ( diffuse small cleaved cell in the Working
Formulation). Each series has its own characteristics; no uni-
form histopathologic presentation is apparent. Our series had
only one case of high grade lymphoma, whereas 11 (61%) of the
18 previously reported cases presented with high grade lym-
phoma. A possible explanation for the variation in the number
of high grade neoplasms is that six of the 11 patients with high
grade lymphomas had AIDS.

Previous reports indicate that most rectal lymphomas are of
B-cell origin (17-25). Our series correlates with these findings;
however, we also found several null-cell lymphomas. Null-cell
lymphomas are often identified as primitive B-cell tumors by
molecular studies, which were not done on our cases.

Rectal lymphomas are an unusual manifestation of GI lym-
phomas, occurring more commonly in males, with an apparent
increase in homosexuals, most likely in conjunction with AIDS.
The clinical presentation is similar to that of rectal carcinoma,
evidence of lymph node involvement or B symptoms may
not be present. Any type of lymphoma may be present, with all
grades represented. They tend to be B-cell neoplasms, with no
T-cell lymphomas identified.

Addendum
Since we finished our study, we have experienced three more
cases of primary rectal lymphoma with high grade histology.
All three patients had AIDS.

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Addendum


