The Surgical Treatment of Hodgkin’s Disease

GEORGE T. PACK AND DAVID W. MOLANDER

The Pack Medical Foundation, New York, New York

Summary

Re-evaluation of the role of radical surgery in the treatment of early Hodgkin’s disease is proposed. The correct application of surgical techniques for the diagnosis of Hodgkin’s disease and the treatment of complications and concurrent unrelated diseases is elaborated. The acceptable indications and probable contraindications for radical extirpative dissection followed by a full tumor dose of irradiation as the initial treatment of patients with unifocal Hodgkin’s disease are discussed.

A significantly higher 10-year survival rate occurred in a limited number of patients with early Hodgkin’s disease treated initially with radical surgery and irradiation as compared with a group treated with irradiation only. Further re-examination of this approach is justified.

Introduction

In a legendary book on the natural history of Ireland, there was purported to be a chapter listed in the table of contents as “Snakes of Ireland,” but on turning to the listed page number, the subject was disposed of with the laconic sentence: “There are no snakes in Ireland.” So today, some iconoclasts have intimated that “there is no surgical treatment of Hodgkin’s disease” and are inclined to refer all cases of this disease to the therapeutic disciplines of irradiation and chemotherapy. In the denial of any indications for primary surgical treatment they could be 90% correct, but there are occasional settings in which surgical excision may serve beneficially as an ally of the more commonly employed modes of treatment (Table 1).

Biopsy

Three centuries have elapsed since Malpighi (20) in his “De Viscerum Structura” described the necropsy findings of nodular splenic lesions and lymphadenopathies characteristic of the lymphoid disease to which we now apply the eponym, “Hodgkin’s disease.” Of the 7 cases originally described by Thomas Hodgkin in 1832 (14), only 3 would qualify today as truly representative of the disease which bears his name. Regardless of specific signs and symptoms, the clinical diagnosis is never as accurate as a peripheral node biopsy. For the record, for future statistical evaluation, for the estimation of prognosis, for guidance in the choice of therapy, a biopsy is essential. It may be accomplished most satisfactorily by the complete removal of a peripheral lymph node. Partial removal of a lymph node is hazardous because the capsule is released and local spillage and infiltration may occur. Aspiration biopsy is condemned; it may afford evidence to the pathologist that the lesion is lymphomatous, but it does not permit of detailed classification. If we stress this necessary minor surgery so strongly at this time, it is for 3 reasons: (a) the incredible evidence that many physicians in this present day ignore the presence of and do not remove an enlarged and obviously pathologic lymph node for biopsy, influenced by the dangerous assumption that it is due to an inflammatory lymphadenitis; (b) some patients continue to be treated by irradiation and/or chemotherapy without histologic verification of the diagnosis; (c) if such a lymph node were excised more frequently and earlier, the percentage of patients with Hodgkin’s disease in unifocal Stage I would increase, thereby enlarging the opportunities for surgical treatment and greater curability.

If suspicious peripheral lymph nodes do not exist, the surgeon may elect to perform an exploratory laparotomy to biopsy a palpable mass of unknown character, although admittedly the majority of patients with retroperitoneal nodal Hodgkin’s disease have definite enlargement of peripheral lymph nodes. In a series of 50 exploratory laparotomies for obscure abdominal diseases performed at the Memorial Hospital, only 4 were subsequently labeled as futile in affording neither diagnosis nor treatment (39). Thoracotomy is occasionally performed to biopsy a mediastinal or pulmonary mass of obscure nature. A preliminary scalene biopsy which reveals Hodgkin’s disease would obviate the necessity for the more major thoracotomy since it would offer presumptive evidence that the mediastinal lymph nodes were part of the same disease.

Lymphangiographic Diagnosis

It is essential not only to establish a definitive histologic diagnosis but also to determine by all possible means the probable staging of the disease. In addition to radiographic visualization of chest and bones, medical surveys by physical examination, blood counts and bone marrow studies, and scintigrams of bony skeleton (radioactive fluorine-18) and liver (radioactive iodine-131 rose bengal), a minor surgical procedure known as lymphangiography may change the clinical staging of Hodgkin’s disease from Stage I to Stage II. For example, by using a tiny No. 10 polyethylene catheter inserted into an intermetatarsal web lymphatic, made visible by a blue dye (alphasearine), a radiopaque liquid called Ethiodal (ethyl ester of iodized poppy seed oil) is slowly injected by a small lymphangiogram pump [Ariel and Resnick (2)]. Visualization of the femoral, inguinal, iliac, and paraaortic and paracaval nodes is achieved. Identification of retroperitoneal Hodgkin’s disease by this procedure has inhibited us from performing groin dissections for erroneously labeled unicentric disease (Stage I). Whenever the radiographic procedure reveals a more advanced stage of this disease, Ariel has continued the lymphatic infusion by substituting Ethiodal syn-
General Principles and Indications for Surgical Treatment

Williams et al. (38) have wisely considered 4 different conditions under which surgery may be helpful to the patient with Hodgkin's disease: (a) surgery for diagnosis: peripheral node biopsy, even laparotomy or thoracotomy; (b) surgery for concurrent unrelated diseases, e.g., appendicitis; (c) surgery for complications directly and indirectly related to Hodgkin's disease, such as hypersplenism, or compression of the spinal cord or trachea; (d) surgery for the definitive treatment of Hodgkin's disease per se.

EVALUATION OF PROGNOSTIC FACTORS IN THE INDIVIDUAL PATIENT: Before subjecting the patient with Hodgkin's disease to the rigors of major surgery, the acceptable indications and the probable contraindications should be fully evaluated. The factors deemed favorable from the standpoint of a good prognosis are normal red blood cell and marrow cell counts; absence of leukocytosis, leukopenia, eosinophilia, and thrombocytopenia; lymphadenopathy localized to 1 region; early surgical intervention for Stage I Hodgkin's disease; bulky local growth but remaining as a unicentric focus; and the histologic type of Hodgkin's disease with nodular sclerosis. Factors strongly suggesting that radical curative surgical efforts are contraindicated include the following states: primary abdominal Hodgkin's disease, Pel-Ebstein septic fever, fever concurrent with the very incipiency of the disease, splenomegaly, multiple regions of nodal involvement, severe pruritus, and antecedent acute infection. Unfortunately, by the time the diagnosis is established there are not too many patients free of 1 or more of the aforementioned unfavorable factors.

UNRELATED SURGICAL PROCEDURES IN PATIENTS WITH HODGKIN'S DISEASE. All the usual unrelated surgical diseases and indications which can afflict a group of otherwise normal people may occur in patients with Hodgkin's disease. Surgical procedures for cholelithiasis, appendicitis, lung abscess, bleeding ulcers, perforations of the gastrointestinal tract, even Cesarian section for dystocia must be done, employing the usual surgical indications. Bleeding and wound healing may require special attention. Transfusions of fresh whole blood and platelets may be helpful in tiding a patient with advanced Hodgkin's disease over the surgical procedure.

Stage I or Phase I— unicentric focus of Hodgkin's disease. Stage I describes a unicentric focus of Hodgkin's disease without constitutional symptomatology. In selected instances within this group of patients, e.g., with either cervical, axillary, or groin lymphadenopathies, an initial surgical intervention may add many years to the life expectancy of the patient. If a surgical attack cannot be applied, a no less aggressive approach with radiation therapy is indicated. In this stage of Hodgkin's disease, the best chance exists to prevent the malignant tumor from pursuing a progressive and, at times, intermittent and relentlessly malignant course.

Hodgkin's disease, as a disorder, may implicate the entire reticuloendothelial system but, fortunately, may affect only a regional group of lymph nodes in its incipiency. In order of frequency, the initial lymphadenopathies reported by our patients are as follows: cervical, mediastinal, axillary, inguinal, para-aortic, mesenteric, epitolchlear, preauricular, nasopharyngeal, and simultaneous multicentric regions (Table 2). The most fundamental concept here in the choice of future treatment is the realization that it may be a clinically localized disease and, therefore, amenable to extirpative dissection (32). Such a unicentric focus should be treated early in its development, and before dissemination occurs, either by complete regional dissection or by equally aggressive radiation therapy. Every diagnostic effort should be made to insure the unicentricity of this disease before venturing into a radical surgical approach. The number of patients with Hodgkin's disease who fit into this favorable category remains quite limited, but would increase many fold if earlier nodal biopsies were performed. For example, the presenting manifestations in 316 patients with Hodgkin's disease in our series are listed in Table 3. If the 150 patients who asserted that the initial manifestation of this disease was an enlarged lymph node in 1 of these 3 superficial regional groups (neck, axilla, groin) immediately had a peripheral node biopsy, the initial therapy might well have been a radical node dissection and greatly enhanced opportunity of cure for 50% of our patients. Patients with Stage I Hodgkin's disease in whom the disease has a slow evolutionary gamut do better with surgical treatment than patients with a fulminating type of growth.

Of course, there are surgical pessimists who assert that if a
disease. Nodular sclerosis was the most common histologic type of Hodgkin's disease, and our series of patients with Hodgkin's disease undergoing spontaneous sclerosis was greater than all the other types combined. Evidently this histologic variety of Hodgkin's disease, as compared with other types, was 15 times more frequent in Stage I of his series; the patients had a median survival of 11 years. Lukes states that in Stage I the frequency of Hodgkin's disease characterized by the formation of collagen, suggesting to Lukes that a relationship exists between the sclerosing feature of this regional lesion and quiescent Hodgkin's disease. Because of the unusually good prognosis, perhaps venturesome surgeons should attempt more mediastinal dissections through sternotomy incisions in suitable subjects.

### The Surgical Treatment of Unieentric (Stage I) Hodgkin's Disease in Peripheral Lymph Nodes

A physician cannot accurately assess the exact extent of Hodgkin's disease, but it is a serious error to assume the incurability of the disease when it is palpably limited to 1 regional group of lymph nodes and so to delay treatment while watchfully waiting for dissemination to become clinically evident. It is also improper to administer a sublethal dose of irradiation when influenced by this defeatist attitude. The thesis has been held by many physicians that Hodgkin's disease is a generalized systemic ailment even from the moment of its inception. There is sufficient evidence and experience to refute this opinion. In the American Journal of Pathology, in 1942, Gall and Mallory (13) made the astute statement that "malignant lymphomas should not be regarded as a systemic disease at the onset, but as unieentric in origin, spreading into other foci at extremely variable rates." Stage I unifocal Hodgkin's disease of the neck, axilla, and groin may be successfully eradicated by aggressive total lymph node dissection.

Diamond (9), an internist, attempted to instruct surgeons concerning the restrictions or limitations in selecting patients for radical surgical extirpation of regional node groups (vide infra). With the disease unilateral in the neck, radical neck dissection was to be done only when the involved nodes were superior to an imaginary line bisecting the neck horizontally at the midpoint of another imaginary line drawn from the mastoid eminence of the temporal bone to the midpoint of the clavicle. If the mass was at or inferior to this axis point, surgery should not be the elected discipline. In the axilla, with Clinical Class or Phase I setting, dissection should be done only when the involved nodes are confined to the lower portion of the armpit and not up near, or in, the apical region. In the groin, it was his advice to recommend dissection only in Clinical Class I cases with palpable femoral nodes but no enlarged inguinal nodes. These arbitrary limitations and selected indications for surgery are mentioned here because they have been given wide publication. We cannot subscribe to these dicta because they would deny opportunities for cure. Slaughter (29), for example, has had a patient surviving 20 years who had retroclavicular node dissection. We know that Hodgkin's disease appearing first in supraclavicular nodes may represent the classic signal nodes of Troisier-Virchow, be tokening cryptic intrathoracic or intraabdominal foci, but it is not necessarily so and the patient should be given the benefit of the chance.

#### Scope of Surgical Exeresis

Our scope of surgical exenteration for Clinical Class I of Hodgkin's disease in the lymph nodes of the neck, axilla, and groin is as follows: The radical neck dissection includes the removal of the sternocleidomastoid, omohyoid, and platysma muscles, the internal jugular vein, the adventitial coat of the carotid artery, and all of the fat, lymphoid, and areolar tissues in the neck, in-
Results of Surgical Treatment

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hospitalized for study and treatment), there was only 1 instance
the surgeon compromise on the scope of the exéresis?

ellipse of skin is sacrificed, the skin flaps dissected widely back,
by surgery received postoperative irradiation. Surgical treatment
several sources.

of definitive surgical treatment, a radical neck dissection. The
patient was living 8.5 years later.

be used because the local effects of such operations are apt to
much as the operative mortality is practically zero, why should
remain permanent, whereas the side effects of irradiation not
only are permanent but also may be progressive.

if the regional node dissection is thorough, there should be no
reasonable need for supplemental external radiation therapy. Influenced by a combination of caution and fear, we have rou-
tinely administered X-ray therapy after dissections of the neck,
axilla, and groin for Hodgkin's disease. Postoperative irradiation
should be given with the same dosage factors as for primary
irradiation of Hodgkin's disease. We have not used preliminary
radiation therapy followed by dissection for 2 reasons: the subse-
quent dissection is more technically difficult, and wound healing
is impaired. Postirradiation dissection is indicated in some in-
stances for the removal of nodes which have become resistant to
irradiation. Slaughter and Craver (30) stated that if the results
of surgical therapy equal the results of irradiation, surgery should
be used because the local effects of such operations are apt to
remain permanent, whereas the side effects of irradiation not
only are permanent but also may be progressive.

Results of Surgical Treatment

The end results of definitive surgical therapy for Clinical
Class or Phase I Hodgkin's disease may be summarized from
several sources.

Gall (12). Gall, in 1943, was the earliest advocate of surgical
treatment for unifocal Hodgkin's disease. The median survival
of the group treated surgically was 5.4 years, and of the group
treated by X-ray therapy, 3.2 years. None of the patients treated
by surgery received postoperative irradiation. Surgical treatment
resulted in a 5-year survival rate of 41%.

Williams et al. (38). In their group of 400 patients (240
hospitalized for study and treatment), there was only 1 instance
of definitive surgical treatment, a radical neck dissection. The
patient was living 8.5 years later.

Slaughter (29). In Slaughter's original report of 1958 (31),
11 of 18 patients having radical neck dissections survived for
6-14 years. The same group of patients are now well for 12-20
years, with the exception of 1 patient who died of multiple
sclerosis in his 11th postoperative year. Since the 1958 report, 16
more patients have survived the 5-year interval after neck dis-
section.

Lacher (18). Lacher cited 11 cases from the Memorial Hos-
pital, New York City, in which the patients had radical surgical
dissection, with or without combined radiation therapy, for
Stage I Hodgkin's disease. Two patients having only surgery
survived more than 5 years. Five patients who had surgery com-
bined with irradiation survived 5 years. The 5-year survival in
this group was, therefore, 63.6%. Of the 93 patients with Stage I
Hodgkin's disease in the total group, which included a majority
treated by irradiation alone, the 5-year survival was 65.6%, a
comparable salvage.

Molander and Pack. The end results of the 316 patients
treated in the Pack Medical Group are given in Tables 4-6. The
most significant observation here is obtained by a study of the
end results of Stage I patients. The 5-year end results secured by
surgical excision and radiation therapy are almost identical, but
the 10-year survival, without recurrence in the interval, is over-
whelmingly in favor of surgical treatment.

In this regard, it is our contention that the number of patients
with unifocal Hodgkin's disease suitable for radical node dissec-
tion could be increased by 1000% if early peripheral node biopsy
were done shortly after the appearance of a painless, palpably
enlarged lymph node.

Spleenectomy in Hodgkin's Disease

The consideration of possible surgical therapy involving re-
moval of the spleen in patients with Hodgkin's disease entails 2
major problems: (a) the management of Hodgkin's disease in the
spleen either as a primary site or when splenic involvement is
part of the systemic disease; and (b) splenectomy as a means of
correcting the secondary hypersplenism which complicates the
life history of Hodgkin's disease in some patients.

The gross types of splenic involvement have been classified
into 4 general groups by Ahmann et al. of the Mayo Clinic (1):
(a) homogeneous enlargement, in which there is no discernible
discrete mass, with diffuse replacement of the splenic archite-
cture; (b) miliary type, in which there are fine nodules distributed
uniformly throughout the parenchyma of the spleen (the follicu-
lar distribution throughout the organ corresponds with the gross
miliary appearance, e.g., Hodgkin's disease with nodular sclero-

Table 4

Unifocal Hodgkin's Disease: Surgical Treatment with Elective
Postoperative Radiation Therapy

<table>
<thead>
<tr>
<th>Procedure</th>
<th>No. of patients</th>
<th>Postoperative X-ray (r)</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radical neck dissection</td>
<td>3</td>
<td>3000-3600</td>
<td>2 N.E.D.* (10, 12 yr.); 1 dead 3 yr. 6 mo.</td>
</tr>
<tr>
<td>Radical axillary dissection</td>
<td>3</td>
<td>3000-3600</td>
<td>2 N.E.D. (10, 11 yr.); 1 dead 2 yr. 8 mo.</td>
</tr>
<tr>
<td>Radical groin dissection</td>
<td>5</td>
<td>3000-3600</td>
<td>4 N.E.D. (7, 10, 11, 11.5 yr.); 1 dead 3 yr. 2 mo.</td>
</tr>
<tr>
<td>Segmental excision of lung</td>
<td>1</td>
<td>3400</td>
<td>Dead 2 yr. 6 mo.</td>
</tr>
</tbody>
</table>

* N.E.D., no evidence of disease; no further definitive treatment has been necessary.
George T. Pack and David W. Molander

Primary Hodgkin's Disease in the Spleen

In the rare instance of primary Hodgkin's disease in the spleen, without studies suggesting the nature of the ailment such as blood count deviations, bone marrow changes, absence of suspicious peripheral lymph node enlargement, the removal of the spleen may be done as an organ biopsy. Needle aspiration of the spleen is not often diagnostic. If the patient does not have generalized Hodgkin's disease, there could be little objection to splenectomy as an initial measure. If splenomegaly is caused by visceral Hodgkin's disease, because of the unusual hazards and the weight of cumulative evidence that the operation does not measurably alter the inexorable course of the disease, Strawitz et al. (34) have asserted that patients with Hodgkin's disease and leukemia exhibited a shorter survival time and higher operative mortality and morbidity after splenectomy than those patients with lymphosarcoma and myeloid metaplasia. The prognosis following splenectomy for Hodgkin's disease is said to be much worse than for lymphocytic lymphosarcoma or for reticulum cell sarcoma.

Secondary Hypersplenism

Numerous therapists have agreed that splenectomy is a valuable accessory measure to medical treatment of secondary hypersplenism associated with Hodgkin's disease. The intended surgical patient should be critically evaluated and selected with care. The overactivity of the spleen in hypersplenism creates an abnormal hematologic state which requires immediate correction. The mechanism of secondary hypersplenism has been illusory, but the explanation of Doan (10) appears logical, namely, of sequestration and phagocytosis of blood cells and platelets by the spleen. Duckett (11) asserts that an autoimmunologic factor is apparent in many patients. According to Williams et al. (38), the bone marrow picture associated with secondary hypersplenism reveals the following alterations: megakaryocytic hyperplasia if there is peripheral thrombocytopenia; erythroid hyperplasia in the presence of secondary hemolytic anemia; myeloid hyperplasia associated with peripheral neutropenia; or marrow hyperplasia affecting all cellular components if there exists a peripheral pancytopenia. It would be a truism to declare that the cellular marrow should be proved adequate before venturing to perform splenectomy in these patients, although Grace and colleagues (34) have successfully performed splenectomy in the presence of hypoplastic marrow. It is rational, therefore, to state that patients with Hodgkin's disease that is not accelerating, whose life is in danger from cytopenia and/or hemolysis and who are recalcitrant to steroid therapy, should accept splenectomy as a necessary surgical expedient.

Results of Splenectomy for Secondary Hypersplenism Associated with Hodgkin's Disease

Two parenthetic remarks should preface the summary of the end results of treatment: (a) The surgical procedure of splenectomy apparently does not accelerate the course of Hodgkin's disease; (b) Splenectomy for secondary hypersplenism probably does not change the eventual outcome—namely, fatality—for patients with Hodgkin's disease.

WILLIAMS ET AL. (38). In a survey of some 400 patients with Hodgkin's disease seen at the Ohio State University School of Medicine between 1940 and 1956, the most frequently occurring complication requiring surgical intervention was hypersplenism, for which splenectomy was performed in 11 instances. Nine of these patients showed the hematologic re-equilibration that was anticipated and predicted on the assumption that the spleen was the organ principally responsible for the cytopenic mecha-

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<table>
<thead>
<tr>
<th>TABLE 5</th>
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<tbody>
<tr>
<td>Hodgkin's Disease: Survival of 316 Patients from Date of Histologic Diagnosis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage</th>
<th>No. of Patients</th>
<th>Treatment</th>
<th>Survival 10 yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>74</td>
<td>12 Surgery + X-ray 62 X-ray</td>
<td>83.3 66.6 58.3 7</td>
</tr>
<tr>
<td>II</td>
<td>188</td>
<td>X-ray</td>
<td>72.9 37.5 9.7 6</td>
</tr>
<tr>
<td>III</td>
<td>54</td>
<td>X-ray</td>
<td>59.5 24.6 6.4 12</td>
</tr>
<tr>
<td>Total</td>
<td>316</td>
<td></td>
<td>58.2 26.9 8.4 27</td>
</tr>
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<table>
<thead>
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<th>TABLE 6</th>
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<tbody>
<tr>
<td>Hodgkin's Disease: Survival of 316 Patients from Time of 1st Visit to Pack Medical Group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage</th>
<th>No. of Patients</th>
<th>Treatment</th>
<th>Survival 10 yr.</th>
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<td>I</td>
<td>74</td>
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<td>316</td>
<td></td>
<td>58.2 26.9 8.4 27</td>
</tr>
</tbody>
</table>

...
nism (10). No contraindications to splenectomy for hypersplenism were experienced in this series. The patients survived from 1 to 28 months following removal of the spleen.

Schultz et al. (26). Of 10 patients undergoing splenectomy for hypersplenism, the postoperative survival was from 2 weeks to 25 months.

Strawitz et al. (34). Eighty % of the patients having splenectomy for secondary hypersplenism in this series revealed a favorable hematologic response. The operative mortality was 8%.

Duckett (11). Of 5 patients with Hodgkin's disease and hypersplenism who had splenectomy, 4 lived from 2 to 3.5 years and 1 died in 2 months but not until platelets increased from 50,000 to 600,000 during the 1st postoperative week.

Rousselot et al. (25). Of 347 patients with Hodgkin's disease, 14 (4%) required splenectomy. The operative mortality was 7%. Two patients survived for 7.5 and 11.5 years, respectively. The postoperative survival time of 12 patients was 5.9 months.

Gastrointestinal and Retroperitoneal Involvement

Abdominal involvement was the initial manifestation of Hodgkin's disease in 26 patients (11.4%) in our present series. If laparotomy for biopsy is done, the surgeon, by the exercise of judgment and technical skill, may remove the bulk or all of the tumor, possibly relieving distressing symptoms and affording palliation. The periphery of the tumor-bearing region is marked by silver clips, followed postoperatively by an adequate dose of irradiation.

Liver. At the time of death, the liver may be implicated in 50–60% of patients (15). Primary hepatic Hodgkin's disease has been reported (33) but is indeed rare. We have not encountered it once in our 316 patients. Not one of the 60 hepatic lobectomies we have performed has been for primary Hodgkin's disease.

Stomach. During the years 1932–55, postmortem examinations were performed on 217 patients with Hodgkin's disease at Memorial Hospital, and in 29 (13.4%) the stomach was involved. Gastric localization as a part of generalized Hodgkin's disease is not rare, but the disease in a few instances has been limited to the gastrointestinal tract (4, 28). Usually the involvement of the gastrointestinal tract results from invasion via retroperitoneal or mesenteric nodes. Generally speaking, when the stomach is involved, it is found in the terminal phase of the disease or at necropsy. The Gastric Service at Memorial Hospital has not observed primary Hodgkin's disease of the stomach so diagnosed by the pathologists of that institution. Portmann et al. (23) found 46 such cases and added 6 of their own for a total of 52. Warren and Littlefield (37) as well as Marshall (21), all from the Lahey Clinic, reported 9 instances of primary Hodgkin's disease of the stomach.

Atlee (3) performed a gastrectomy for primary Hodgkin's disease; the patient was living and well 7 years later. Our report includes only 2 subtotal gastrectomies, both performed for intractable gastric hemorrhage in stomachs secondarily involved by Hodgkin's disease: 1 patient survived 17 months, the other for 4.5 years (Table 7). Contrast the results with primary lymphosarcoma of the stomach, of which there were 9 cases among 567 patients (22), with several long-term cures following total gastrectomy. Craver and Herrmann (8) have stated that survival from the immediate effects of gastrointestinal surgery confers as much as twice the usual life expectancy on the treated patient. Other authorities assert that surgical therapy offers no better results than proper irradiation. It has been said, without adequate proof, that extirpation of a major focus of this disease affords temporary growth restraint on the residual disease.

Small Intestine. Primary Hodgkin's disease of the small intestine occurred in 2 instances in the present series; the more common secondary involvement occurred in 6 patients. Intestinal obstruction, partial or complete, is the signal of involvement; children may have intussusception. Of 6 of our patients having laparotomy for intestinal obstruction, 2 were inoperable, 2 had bypass enterointerostomy (surviving for 7 and 10 months), and 2 had resection and anastomosis (surviving for 6 and 16 months).

Colon. Primary Hodgkin's disease of the colon occurred in no patient in this series; secondary involvement was found in 9 instances. Three patients had lesions within the reach of the sigmoidoscope. Complications included obstruction, perforation,

TABLE 7

<table>
<thead>
<tr>
<th>Stage</th>
<th>No. of patients</th>
<th>Indication</th>
<th>Procedure</th>
<th>Duration of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>2</td>
<td>Gastric hemorrhage</td>
<td>Subtotal gastrectomy</td>
<td>4.5 yr.; 17 mo.</td>
</tr>
<tr>
<td>II</td>
<td>6</td>
<td>Small intestinal obstruction</td>
<td>Resection and anastomosis, 2 patients</td>
<td>6 mo.; 16 mo.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bypass enterointerostomy, 2 patients</td>
<td>7 mo.; 10 mo.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inoperable, 2 patients</td>
<td>4 mo.; 6 mo.</td>
</tr>
<tr>
<td>II</td>
<td>1</td>
<td>Intestinal obstruction</td>
<td>Hemicolectomy</td>
<td>4 yr. 10 mo.</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>Hemolytic anemia</td>
<td>Splenectomy</td>
<td>4 mo.</td>
</tr>
<tr>
<td>II</td>
<td>2</td>
<td>Bulky retroperitoneal Hodgkin's disease</td>
<td>Removal of bulky mass</td>
<td>7 mo.; 2 yr.</td>
</tr>
</tbody>
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and hemorrhage. One patient had a hemicolecctomy for Hodgkin’s disease causing obstruction at the splenic flexure; survival was for 4 years and 10 months.

Intrathoracic Involvement

In our series, almost 1 in 6 patients had initial intrathoracic Hodgkin’s disease. Fifty-two patients (16.4%) had mediastinal adenopathy; 12 (23%) had associated pleural effusion. Five patients had pleural effusion without detectable mediastinal involvement. One patient had a solitary nodular intrapulmonic lesion which proved to be Hodgkin’s disease on segmental excision. Primary pulmonary Hodgkin’s disease has been reported by Charr and Wacelonis (5), Versé (36), and Simonds (27). The mediastinal nodes are commonly involved, especially during childhood. It can be readily appreciated that surgical therapy rarely is indicated under these circumstances. Craver relates an instance of upper right pulmonary lobectomy for repeated and worsening hemoptysis arising from an eroded bronchus. Lung abscesses are not infrequent and present a special problem. In patients who have been on long-term steroid therapy, nocardial abscesses sometimes occur. Aspiration of these cavities, or even thoracotomy with adequate biopsy, culture, and drainage, may be necessary. The only surgical procedure done with some frequency is the minor expedient of pleurocentesis when indicated, although this procedure also offers an avenue for the intrapleural introduction of chemotherapeutic agents or radioactive ceramic microspheres (Table 8).

Involvement of the Central Nervous System

Prevertebral Hodgkin’s disease may invade between the vertebral columns to reach the epidural space, producing a dumbbell tumor effect. With rapid growth, paraplegia may result, thus creating an acute emergency. The pressure on the spinal cord must be relieved immediately; else the paralysis may be permanent. Two methods of procedure have their stout advocates and both are probably right. One school of thought immediately administers a large dose of nitrogen mustard or vinblastine followed as soon as possible, day or night, by the 1st exposure to external irradiation. Complete relief from the compression symptoms and signs of myelitis has been secured many times by external irradiation alone (33). One of our patients obtained complete remission and has been in good health for 4 posttreatment years. Radiation therapy in inadequate dosage may induce edema of tissue within an enclosed space, which could aggravate the cord compression. This contingency seldom occurs unless previous radiation therapy has been given, or the focus of Hodgkin’s disease in the epidural space is fibrotic and unusually radioresistant. Under these and certain other circumstances, laminectomy is feasible for quick decompression. Laminectomy is also indicated whenever there is bony compression of the spinal cord secondary to vertebral fracture due to osteolytic Hodgkin’s disease. Craver (7) has cited an instance in which the surgical removal of a bulky protruding mass invading both plates of the skull, with pressure on the brain, was definitely of palliative value.

Involvement of Bone

An extremely high percentage of patients with Hodgkin’s disease ultimately have foci in the red marrow of the vertebrae, ribs, pelvis, skull, and femurs. Kooreman and Haex (17) have reported primary disease of the skeleton, but surgical therapy for bone lesions other than rare pathologic fractures is seldom employed.

Involvement of Other Viscera

Primary Hodgkin’s disease has been reported as originating in the kidney, the uterus, and the ovary, but nephrectomy and panhysterectomy are seldom applicable. Primary Hodgkin’s disease of the breast is rare; radical mastectomy for secondary mammary involvement is not done.

Conclusions

1. The clinical settings in Hodgkin’s disease in which a surgical approach may be the initial treatment of choice are enumerated. A plea is made for the earlier diagnosis of unifocal Hodgkin’s disease in the hope that this may allow a higher salvage rate and potential cure in this limited group of patients.
2. The general principles and indications for the initial treatment of patients with unifocal Hodgkin’s disease by surgery are discussed. A full tumor dose of irradiation is, nevertheless, given to any patient who undergoes wide dissection for unifocal Hodgkin’s disease.
3. The 10-year survival rate of a limited number of Stage I patients treated initially with surgery and irradiation at the Pack Medical Group seems to indicate that an initial radical surgical approach followed by an adequate dose of irradiation (3000–3600 r) offers these patients a better chance for long-term survival and potential cure than irradiation alone. The 10-year survival rate of patients thus treated was significantly higher than that of patients with Stage I disease that was amenable only to irradiation.
4. Palliative surgical procedures, employing accepted surgical criteria, are at times necessary, and prolonged survival of some patients has been noted.
5. Surgery as the initial treatment of choice in early Hodgkin’s disease, followed by irradiation in adequate dosage, should be re-evaluated.

References

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Surgical Treatment


Fig. 1. Lymphangiographic diagnosis. A. Bilateral involvement of the iliac lymph nodes. B. Demonstration of Hodgkin's disease in the abdominal and iliac lymph nodes after lymphatic infusion of Ethiodol-131I.
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George T. Pack and David W. Molander

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