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Clinical and Surgical Staging of Hodgkin's Disease

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ABSTRACT

Staging laparotomy was performed in 36 patients with Hodgkin's disease. The surgical procedure changed the stage in 14 cases or 36 % and also revealed subdiaphragmatic disease in 14 patients. Mixed cellularity and nodular sclerosis were the main histopathological types, contributing 44 % and 42 %, respectively, of the whole material. Postoperative complications occurred in 8 cases (22 %) - none was fatal. The average hospital stay was 9.5 days, the longest being 22 days.

INTRODUCTION

Since Thomas Hodgkin in 1832 described the disease that now bears his name (7), the condition has had a very dismal prognosis for decades. There was little or no improvement in the treatment of the disease until the development of high-energy irradiation, which allowed the delivery of tumoricidal doses to restricted areas and to large volumes of the tumor. In addition there was progress in chemotherapy. Soon, however, it was apparent that a high proportion of the treated patients had prior undetected abdominal lesions. In order to detect and further treat occult intra-abdominal involvement the staging operation was gradually developed, starting with Kaplan's group (9).

At the University Hospital of Uppsala, the first staging operation was performed in June 1972 and now, six years later, we want to present our experience from 36 patients with Hodgkin's disease, who have undergone such an operation.

MATERIAL AND METHODS

Twenty-two males and fourteen females were included in the series. Mean age for onset of the disease:

males	35.1 years	(range 21 - 70 years)
females	26.3 "	(" 14 - 41 ")

Seventeen of the men and all the women (thirty-one patients) were younger than 50 years.

The diagnosis of Hodgkin's disease was made from lymph node biopsies. The histological subtyping was made according to the Rye classification (12).

The patients were preoperatively examined and clinically staged by means of non-operative methods, i.e. physical examination, routine hematological analyses, which were performed by an automatic cell counter (Coulter Counter S), serum electrophoresis, liver function tests such as bilirubin (14), transpherases and alkaline phosphatase (15), chest X-ray, bone marrow biopsy, lymphangiography, scintigraphy of the liver and spleen using $^{99}Tc^{m}$ tin or sulphur colloid.

All the patients underwent staging laparotomy. The aim of that operation was to examine whether the disease had any manifestations below the diaphragm.

The operative procedure included splenectomy (also removal of any existing additional spleen), wedge biopsy of the liver, and lymph node sampling in the areas recommended by the Stanford group (4,5,6), i.e. the splenic hilar region and the coeliac region but also along the aorta and the major vessels or any obviously enlarged node. The lymph node sampling sites and the splenic pedicle were marked with silver clips.

To afford protection from radiation the ovaries were moved to the anterior superior aspect of the uterus. The position of the ovaries after transfer was marked with silver clips.

RESULTS

Symptoms at onset are shown in Table 1. The most common initial symptom was enlarged cervical lymph nodes or palpable nodes in the supraclavicular region, altogether in 70 %. One patient showed a palpable mass in the axilla, one had a tumor in the biceps region of his left upper extremity (6 %). Other symptoms (including fever, tiredness, coughing and an increased blood sedimentation rate) were noted in 6 patients (16 %). "B-symptoms", like night sweating, itching or weight loss was at onset present in 3 cases (8 %).

Table 1. Symptoms at onset in Hodgkin's disease

Symptoms	Number	%
Enlarged cervical or supraclavicular lymph nodes		
right side	16	
left "	8	
bilateral	1	70
Palpable mass in the axilla or in the biceps region of the arm	2	6
Other symptoms	6	16
"B-symptoms"	3	8

Besides palpation, pulmonary X-ray was the most valuable clinical staging tool, often exposing mediastinal masses. The results given as positive findings of the different investigations are shown in Table 2.

Table 2. Patients with positive results in clinical staging of Hodgkin's disease

Method of examination	Number of investigated patients	Positive findings	
		Number	%
Pulmonary X-ray	36	16	44
Scintigraphy of the liver and spleen	33	2	6
Liver function tests	36	15	42
Lymphangiography	36	9	25

Bone marrow smears and histological examination of aspirated particles showed in 8 cases slight, non-specific reactions. No signs of Hodgkin's disease were found in the examined bone marrow specimens.

Scintigraphy of the liver showed in two cases such changes that Hodgkin's disease of the liver was suspected. None of them had, however, histological signs of the disease in their liver biopsies at laparotomy. Pathological liver function tests were observed in 15 patients and almost exclusively involved the transpherases without any pathological change of the alkaline phosphatase values. Usually there was only a slight rise in the values of one or the other of the transpherases, but in none of these cases was the liver biopsy positive. One patient with histologically verified liver involvement also had pathological values of alkaline phosphatase and transpherases simultaneously.

Lymphangiography was performed in 30 cases. In another 3 patients such an attempt technically failed. 9 lymphangiographies were considered positive, whereas 21 were negative. Among the positive cases 5 showed histological signs of Hodgkin's disease in the lymph nodes. In 4 cases histological examination of the collected lymph nodes could not confirm the lymphangiographic finding. In 2 cases there were positive paraaortic lymph node biopsies in spite of negative lymphangiographies, and in another 5 cases positive lymph nodes were collected from the splenic hilar region.

Changes in the clinical staging as a result of the operative findings are illustrated in Table 3. A tendency to a further concentration of the patients in stage II and III was seen following the operative procedure, although the changings were not statistically significant. 14 patients (39 %) were registered in a different stage after laparotomy than initially, 8 of them in a more advanced group.

Table 3. Distribution of different stages before and after surgical staging

	Clinical stage	
	before laparotomy	after laparotomy
I	10	7
II	14	15
III	10	12
IV	2	2

The histopathologic type (Table 4) was distributed among mixed cellularity (MC) 16 cases (44 %), nodular sclerosis (NS) 15 (42 %) and lymphocytic predominance (LP) 5 (14 %). None of the cases was initially classified as lymphocytic depletion (LD). Further control of the material has revealed mixing of types in 7 cases (19 %) which means that there was both the MC and NS type in 4 cases, MC and LP in 2 cases and MC and LD in 1 case.

Table 4. Distribution of different types in Hodgkin's disease

Histopathologic type	Number	%
Lymphocytic predominance	5	14
Nodular sclerosis	15	42
Mixed cellularity	16	44
Lymphocytic depletion	-	-

Postoperative complications occurred in 8 patients (22 %). The complications are outlined in Table 5. No postoperative death has occurred.

Table 5. Postoperative complications after staging laparotomy in cases of Hodgkin's disease

Complication	Number of patients
Pneumonia	3
Fever without signs of infection	2
Subcutaneous wound rupture	1
Pancreatitis	1
Abdominal pain without signs of ileus, pancreatitis or peritonitis	1
	8

The postsurgical stay averaged 9.5 days. The shortest stay was 5 days and the longest 22 days.

DISCUSSION

The spleen often seems to be involved in Hodgkin's disease. Splenectomy has also been stressed as being important in assessing the extent of the disease (1,4,5). In our study involvement of the spleen was demonstrated in 1/3 of the patients but in nearly all of these cases there were simultaneously histological signs of perihilar lymph node engagement. Positive lymph nodes were found in various localizations - most often in the vicinity of the spleen or the splenic vessels but also along the aorta.

Splenic involvement seems to increase the risk of liver engagement (3). In our material only two patients showed histopathologic signs of Hodgkin's disease in the liver in spite of nearly 50 % demonstrated positive liver function tests. Often an isolated transpherase value was abnormal. One of the patients with liver engagement had multiple abnormal values including that of alkaline phosphatase. This is in agreement with the assumption that multiple abnormal test reactions in the liver battery are associated with an increased likelihood of liver involvement in Hodgkin's disease (7).

A positive liver scintigraphy may be an indication in the same direction. In 2 cases there were, however, suspected changes of the liver scintigraphy, but none of these patients had positive liver biopsies. Unfortunately, the two patients with liver involvement were not examined in that way preoperatively.

Lymphangiography showed both false positive and false negative findings. In 4 cases the pathologist could find only benign changes in spite of positive lymphangiography and apparently representative biopsies. In 2 cases there were positive findings histologically in the paraaortic lymph nodes without any indications preoperatively of such a spreading of the disease. Another 5 cases showed a positive histology in spite of negative lymphangiography, but these nodes were all collected from the splenic hilar region. However, it must be stressed that the radiographs should be available at the operating theatre. An immediate examination by the pathologist of collected specimens is further recommended in cases where there are doubts about the lymphangiographic findings - vis-à-vis the macroscopic findings during the laparotomy.

Histologically mixed cellularity constituted the major type and together with nodular sclerosis represented more than 85 % of the whole material. Other findings of interest by the pathologist were an abundance of eosinophilic cells in the spleen in many cases, although there was no proof of Hodgkin's disease. If this is of any importance can perhaps be revealed by future controls.

The role of splenectomy in the treatment of patients with Hodgkin's disease is controversial. Whether it adds to the survival as a whole is still unknown. Improved tolerance to subsequent cytostatic therapy may be achieved by splenectomy at least in patients with advanced disease. Conflicting data exist whether or not there is a definite risk of postsplenectomy infections in

individuals with Hodgkin's disease (2,6). In our series a 30 years old man developed a septicemia 4 years after splenectomy. Although intensive treatment including antibiotics and steroids was given his severe infection had a fatal outcome. This case of splenectomy undoubtly points to the risk but the possibilities of positive findings in the spleen strongly advocate splenectomy as a part in staging procedure of Hodgkin's disease.

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