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Lymphographic Findings in Multiple Myeloma

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Summary

The lymphographic appearances of the retroperitoneal lymph nodes in 10 patients with multiple myeloma have been analyzed. None of the patients had any signs of extramedullary involvement of myelomatosis before lymphography. In 3 cases irregular filling defects suggestive of myelomatous involvement were found. In one case they were close to a myelomatous bone lesion, whereas in the others the lymphographic abnormality was totally unexpected. In all 3 patients other nodes showed reactive hyperplasia. Such nonspecific hyperplasia was also encountered in 3 other cases. In 2 cases the myelomatous involvement of lymph node was detected before the diagnosis was recognized which is contrary to the belief that multiple myeloma involve nodes late in the disease. In addition to diagnostic aid the lymphographic demonstration of the myelomatous spread into lymph nodes may influence on the selection of the therapeutic approach to the disease.

The neoplastic proliferation of plasma cells in the bone marrow is often multifocal and is seen radiologically as punched-out osteolytic defects. However, the disease may sometimes take the forms of disseminated non-osteolytic myelomatosis, solitary myeloma of bone, plasma cell leukemia or extramedullary plasmacytoma of the soft tissue.

Autopsy studies in multiple myeloma (MM) have disclosed that extraskeletal myelomatous infiltration to, for example, the liver, kidney, spleen and lymph nodes is fairly common (1, 2, 3, 4) although the pathogenesis of the process is not clear. The incidence of extraskeletal plasmacytic dissemination is assumed to increase with the duration of the disease (2.5). Thus, at least in long standing cases of MM one might expect lymphographic abnormalities in the retroperitoneal lymph nodes. Since descriptions of the lymphographic appearances in myelomatosis are scanty, we analyzed the lymphograms of 10 myeloma patients without clinical signs of extramedullary growth.

Material and Methods

Bipedal lymphography was performed as a part of the diagnostic evaluation in 10 patients with MM. The diagnosis of MM was ascertained by bone marrow aspirates and by M-component analyses for the serum. In 4 patients the bone radiology also supported the diagnosis. The basic data of the series are given in Table 1. In only 2 patients the diagnosis of MM was known at the time of lymphography whereas in the remaining cases the diagnosis was established shortly after the examination. The indications for lymphography in these 8 patients were: suspicion of malignancy in 5, unexplained high sedimentation rates in 2, and bone destruction in one patient. None of the patients had palpable lymph node enlargement, but 2 had both splenomegaly and hepatomegaly and one only splenomegaly. One patient had an abdominal lymph node biopsy because lymphoma was suspected.

The lymphographic findings were interpreted as follows: (1) normal, including fatty and degenerative changes in lymph nodes, (2) reactive hyperplasia, enlarged nodes with a generally coarse structure and (3) large lymph nodes with irregular

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Tab. 1 Clinical data and lymphographic findings

Case	Sex/Age	At the time of lymphography				Indication for lymphography	Lymphographic findings*
		Myeloma diagnosis	Bone lesion	Hepato-megaly	Spleno-megaly		
1	62/M	–	+	–	–	? Malignant lymphoma	II
2	49/F	–	–	+	+	? Malignant lymphoma	II + III
3	66/F	–	–	+	+	? Malignant histiocytosis	I
4	49/M	–	+	–	–	? Lymphatic leukemia	I
5	60/M	+	+	–	–	Destruction of L I body	II + III
6	75/M	+	–	–	–	Multiple myeloma	I
7	55/M	–	–	–	+	High sedimentation rate	II
8	48/F	–	–	–	–	Paraneoplastic symptoms	I
9	42/F	–	–	–	–	High sedimentation rate	II
10	41/M	–	+	–	–	Destruction of Th II body	II + III

*Lymphographic findings: I = normal, II = reactive hyperplasia, enlarged nodes, coarse pattern, III = marked nodal enlargement, defects

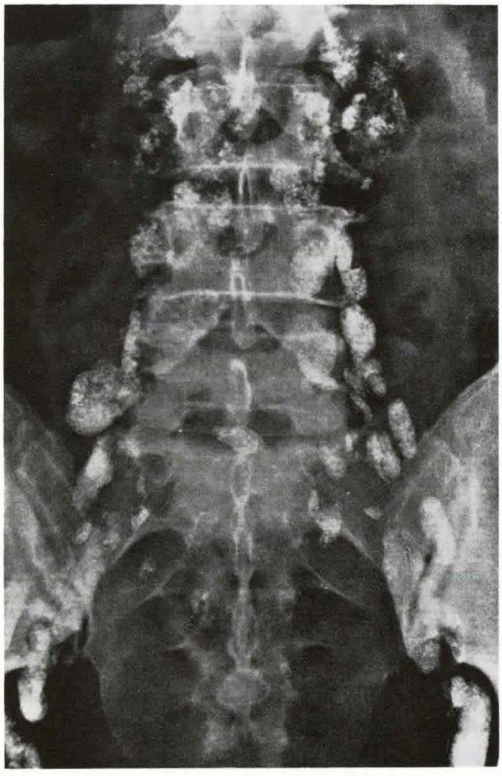

Fig. 1 Case 2: At L II–L IV the large lymph nodes are irregularly delineated and show numerous filling defects, indicating involvement with myeloma. Caudally the nodes are slightly enlarged and show a uniform coarse pattern typical of reactive hyperplasia

defects not traversed by lymphatic channels.

Results

Normal lymphograms were seen in 4 patients (Table 1). In 3 patients distinctive enlargement of several retroperitoneal lymph nodes was found. Their marginal sinuses were mostly well preserved and the internal structure looked regular although coarse. Accordingly, the lymphograms of these 3 patients were classified as reactive hyperplasia. From one of these patients 3 enlarged mesenteric lymph nodes were removed. Histologically, they all showed well preserved node structures although the germinal centers looked small. The sinuses were large and there was an obvious proliferation of macrophages and histiocytes.

In the remaining 3 patients there were marked abnormalities of the lymph nodes. All 3 showed failure of contrast uptake in lumbar nodes due to varying degrees of nodal replacement which lymphographically ranged from minimal ill-defined defects to extensive replacement in many nodes. In addition, reactive hyperplasia was seen in other lymph node regions. The lymphograms of case 2 and 10 are shown in Figs 1 and 2. Interestingly, in

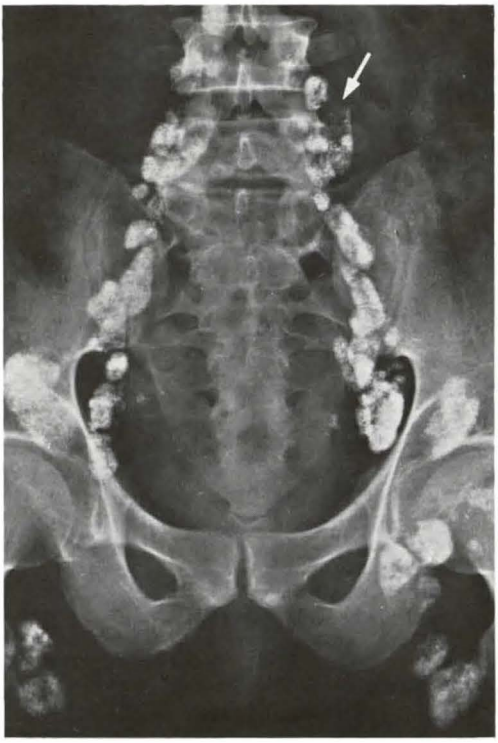

Fig. 2 Case 10: Two large nodes in left lower lumbar region show irregular filling defects and broken margins indicating myelomatous involvement (arrow). The rest of the nodes are slightly enlarged and demonstrate a coarse pattern representing a reactive hyperplasia

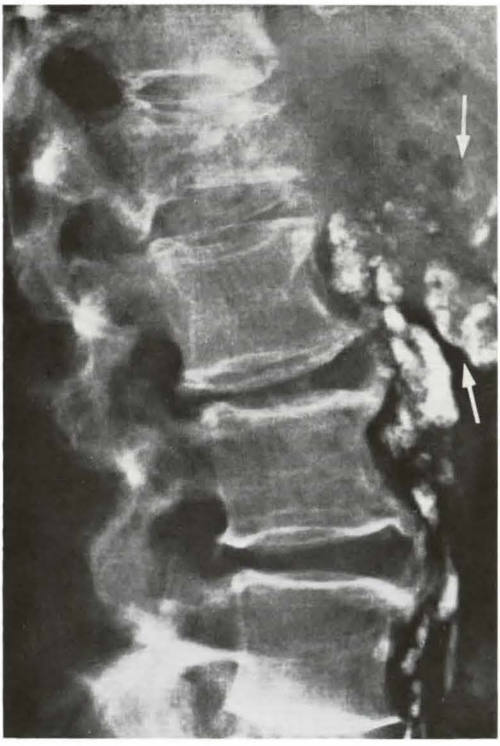

Fig. 3 Lateral view of case 5 reveals destruction and compression fracture of LI vertebra. The lymph nodes are displaced and the largest nodes contain filling defects, indicating involvement with myeloma (arrows)

case 2 a routine chest X-ray also revealed enlarged hilar nodes. In case 5, close to the pathologic nodes, the body of the first lumbar vertebra contained an osteolytic myeloma lesion (Fig. 3). On therapeutic irradiation of the vertebra all the affected nodes were incorporated in the same treatment field. In a control picture taken after the irradiation the pathologic nodes were smaller.

Discussion

A review of the lymphographic literature for the findings in MM revealed only one case (6). Besides widespread osteolytic lesions the patient had numerous granular lymph nodes as well as an enlarged node showing filling defects due to neoplastic involvement adjacent to a large osteolytic bone lesion. *Viamonte* et al. (7) described a case of primary soft tissue myeloma, evidently a plasmacytoma, with small irregularly distributed filling defects in pelvic nodes. On the other hand there are several recorded examples of lymphography in Waldenstrom's macroglobulinaemia, which is closely akin to MM. *Whitehose* et al. (8), using their own and other's experiences, stated that the lymphographic appearances of Waldenstrom's macroglobulinaemia were indistinguishable from those seen in lymphomatous conditions.

In various series of MM at autopsy the incidence of lymph node involvement has ranged from 25 % to 71 % (1, 2, 4, 9). Somewhat paradoxically *Pasmantier* and *Azar* (2) found the longest survival times in patients with distant extraskeletal plasmacytic spread, and that the extraskeletal myelomatous dissemination increased with the duration of the illness. Nevertheless, *Kaplan* et al. (10) claimed that extraskeletal dissemination was commonly associated with a poor prognosis.

In the present series the lymphograms of 3 MM patients demonstrated irregular defects in enlarged nodes and these were interpreted as malignant node infiltrations. In one the pathologic lymph nodes were located close to a skeletal lesion, which according to pathology reports is not uncommon and may simulate a primary plasmacytoma of nodes (5). In a clinical study *Kaplan* et al (10) observed mediastinal and hilar adenopathy in association with myeloma lesions of the ribs and thoracic column.

Our 3 patients with nodal destruction showed lymphographically hyperplastic node reactions in other regions. Similar changes were seen in 3 additional patients. Such nonspecific changes are sometimes seen in some malignant diseases and in a variety of non-malignant conditions, as for example collagenosis, infections, and immunologic processes (11, 12, 13). Although the incidence of reactive hyperplasia was high (6/10), the series is too small and selected for any definite conclusion about its significance. It is possible, that this high incidence may be due to the often increased susceptibility to infections of myeloma patients. It shows, however, that MM should be included among the conditions that produce lymphographically apparent nodal hyperplasia.

When the lymphography demonstrates distinctive infiltrative changes in nodes, the finding may be valuable because the diagnosis can be obtained by a biopsy of lymph node showing evidence of neoplastic involvement. Moreover, the discovery of nodal destruction near bone lesions makes it possible to include the area of pathologic nodes in the same irradiation field as the bone lesion. Also the therapeutic response as well as a relapse can be assessed by monitoring the abnormal lymph nodes by periodic surveillance films.

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