Surgical Significance of Isolated Axillary Adenopathy *

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THE VALUE of biopsy as a diagnostic tool in surgery has long been established. Virchow as early as 1856 [14] advocated biopsy of tumors as an aid to definitive diagnosis. Interest in the problem was augmented in 1905 by Wilson [16] who described his frozen-section technic, and later by Hellwig [10] who presented a general review of the scientific basis of biopsy of tumors. More recently, one of us (Dockerty) [6] and Jackson [7] have discussed the refinements of rapid frozen-section technic for the microscopic examination of surgical specimens.

Enlargement of lymph nodes, either primary or secondary, is always sought for by the examining physician, and the merit of subjecting a suspicious node to biopsy is well appreciated. Reports of the results of such a procedure appear throughout the literature. Heinrich and Judd [9] have reported a positive diagnosis, excluding, of course, inflammation of lymph nodes, in 78 per cent of a group of cervical nodes examined microscopically. They found that results were positive in 60 per cent of cases when the axillary nodes were utilized and in 33 per cent of cases when the inguinal nodes were used in an attempt to establish a correct diagnosis. Similar results were reported by Brindley and Miller [2] in their analysis of 600 biopsies of lymph nodes. Of course, the low incidence of positive results in the inguinal group is due to the repeated trauma and minor infections sustained by the lower extremities which result, microscopically, in a chronic inflammatory picture with fibrosis within the inguinal nodes.

Daniels [5] renewed interest in this problem in 1949 by his report on what he termed "blind" supraclavicular biopsy. According to his description, patients with indeterminate pulmonary or mediastinal lesions may be spared an unnecessary thoracotomy if the fat pad over the scalenus anticus muscle is removed and examined. This fat pad normally contains small nonpalpable lymph nodes which, he feels, are a continuation of the mediastinal chain. Even though these nodes are not palpable, they often are secondarily involved in pulmonary and mediastinal pathologic processes. In his five original cases in which "blind" supraclavicular biopsy was done, he found metastatic carcinoma in two, Boeck's sarcoid in two and silicosis in one. Others have followed his technic,[1, 4, 8] but as experience has accumulated, the results have been less definite. Shefts and co-workers [13] said that the method gave positive results in only 35.8 per cent of 187 cases. Carstensen and co-workers,[3] in a group of 56 cases, reported positive results in 34 per cent.

* Submitted for publication May 8, 1956.

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We have been concerned with the diagnostic value of biopsy of an axillary node when affected unilateral nodes were found in the absence of any other adenopathy or evidence of primary disease in the breast, thorax and neck. We did not find any specific reports on this point, although Brindley and Miller [2] had recorded a positive diagnosis in 51.5 per cent of instances in which excised axillary nodes had been examined without reference to whether they were the only isolated palpable nodes. Joss,[11] too, studied the cause of apparent primary enlargement of the axillary nodes but he did this without regard to whether the enlargement was a unilateral process. In his group of 84 lesions, 24 represented primary malignant lymphoma, 23 were part of a metastatic malignant process which included five examples of malignant melanoma, 19 were examples of nonspecific chronic lymphadenitis, 17 were histologically compatible with a diagnosis of tuberculosis and one represented a neurofibroma.

In a group of 5,451 women with cancer of the breast Owen [12] found 25 cases in which a metastatic mass in the axilla was the first indication of trouble. Weinberger and Stetten [15] reported five similar cases. They quoted Jackson as having had a like experience with three cases and Westermeyer as having had it with six cases. Owen [12] demonstrated that the five year survival rate is somewhat better in this group than in the group in which there is palpable carcinoma of the breast with clinically involved axillary nodes. For the Owen group the five year survival rate was 50 per cent, whereas for the other group as reported by Harrington [8a] the five year survival rate was only 32 per cent.

METHOD AND MATERIAL

In 222 biopsies of axillary nodes performed at the Mayo Clinic during the years 1951, 1952 and 1953 there were 72 instances in which there was unilateral involvement only and in which no cause could be found on routine examination to explain the adenopathy. These 72 cases were studied in detail and the multiple microscopic sections of each node were reviewed.

TABLE 1. *Results of Bacteriologic Examination of Biopsy Specimens from Unilaterally Involved Axillary Lymph Nodes*

Type of Examination	Number	Results
Routine culture	24	Micrococcus,* 10; Corynebacterium,* 1; negative, 13
Smear for Mycobacterium tuberculosis	1	Negative
Culture for Mycobacterium tuberculosis	27	Positive, 2; negative, 25
Culture for fungi	25	All negative
Culture for Brucella	23	All negative
Guinea pig inoculation for Mycobacterium tuberculosis	1	Negative

* Species undetermined.

RESULTS

There were 31 men and 41 women in the series. The ages ranged from 21 to 83 years, but 80 per cent of the patients were between 40 to 69 years of age. Axillary tissue was removed for biopsy from the left side in 44 cases and from the right side in 28 cases. There were no postoperative deaths in this group, and only one serious accident occurred at the time of biopsy. The accident consisted of inadvertent tearing of the axillary vein with resultant bleeding of such a brisk nature as to require the administration of several pints of blood. The patient recovered uneventfully.

The results of bacteriologic study of biopsy materials in which fresh frozen sections indicated the presence of an inflammatory lesion are given in Table 1. The micrococci and corynebacteria grown in routine cultures were considered to be contaminants. Of three caseous granulomas cultured, two were found to contain Mycobacterium tuberculosis while one did not.

The pathologic findings are given in Table 2. As can be seen, in 50 of the 72 cases

TABLE 2. *Pathologic Diagnoses Made on Examination of Biopsy Specimens from Unilaterally Involved Axillary Lymph Nodes*

Diagnosis	Specimens		Per Cent
Nonspecific changes		50	69.5
Inflammatory changes	24		
Hyperplasia of sinus (reticulum cells)	3		
Inflammatory, fat replacement ("horseshoe" nodes)	17		
Hyperplastic node	6		
Lymphoma		10	13.9
Giant follicular lymphoma	2		
Lymphocytic lymphoblastoma	3		
Reticulum cell sarcoma	3		
Hodgkin's lymphoma	2		
Adenocarcinoma, grade 4		5	6.9
From homolateral breast	3		
Source unknown	2		
Melanoma		1	1.4
Squamous cell carcinoma, grade 4, from lung		1	1.4
Granuloma		5	6.9
Noncaseous	2		
Culture negative	2		
Caseous	2		
Culture positive	1		
Culture negative	1		
Caseous and noncaseous	1		
Culture positive	1		
Total		72	100

the lymph nodes were the site of nonspecific changes. Thirty of the nodes with nonspecific changes featured reactive hyperplasia, while 17 exhibited varying degrees of fat replacement, including four nodes that were so laden with fat as to merit the designation "horseshoe nodes"; in this process of fat replacement, the substitution by fatty tissue commences at the hilus and progresses through the entire medullary portion of the node so that, in extreme cases, only a thin cortical layer of lymphoid tissue remains. The remaining three nodes with nonspecific changes featured proliferation of phagocytic reticuloendothelial cells confined to the sinusoids.

The most common malignant neoplasm uncovered in this group of 72 patients was, as might be expected, malignant lymphoma, which was present in 10 of 17 cases of malignant disease. It was of interest to observe that a grade 4 squamous cell carcinoma of the lung could metastasize and produce considerable involvement of the axillary nodes as its first sign, as happened in one case of our series.

Of the five lesions considered microscopically to be granulomas, three showed areas of typical caseous necrosis and two contained zones of epithelial cell proliferation without caseation; in one axillary lesion caseous and noncaseous areas existed side by side. The pathologist who uses the rapid frozen-section method of diagnosis can be of much assistance to his surgical colleagues and to the patient by screening out these granulomatous lesions, the final diagnosis of which must rest with the bacteriologist.

SUMMARY

In a series of 222 patients in whom biopsy of axillary lymph nodes was necessary to help clarify a clinical situation, 72 exhibited unilateral axillary adenopathy. Cultures were helpful in the definitive diagnosis of the five granulomas discovered in the group. Malignant lymphoma occurred in the form of isolated axillary adenopathy in 10 patients. In 50 patients the nodes were characterized by either inflammatory changes or fat replacement, and this information was of diagnostic aid in a negative manner. In three of five patients with metastatic adenocarcinoma the primary source was determined to be the breast.

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