Hodgkin's Disease First Suggested by Sputum Cytology*

Robert S. Eisenberg, M.D., F.C.C.P.;** and Betty L. Dunton, C.T.†

This 17-year-old Caucasian youth was suspected of having pulmonary Hodgkin's disease on the basis of abnormal sputum cytologic preparations. The diagnosis was confirmed by surgery a short time later. He did well for two years on cobalt therapy and chemotherapy before finally dying of disseminated Hodgkin's disease. This is the first recorded case to our knowledge of Hodgkin's disease which was initially diagnosed by sputum cytologic examination.

Cytologic examination of the sputum and bronchial washings by experienced persons is a relatively routine method of searching for lung cancers. Since Hodgkin's disease involves the lungs in approximately 40 percent of patients,1-3 the presence of these cells must be checked for in the sputum. In February, 1964, the first reported case of Hodgkin's disease limited to the uterine cervix and initially suggested by vaginal and cervical smears was reported.4 A short time thereafter, Suprun and Koss5 described ten patients with proved Hodgkin's disease involving the lung who had positive sputum cytology. The malignant cells did not appear in cell clusters and were predominantly binucleated. Some of the cells which were described closely resembled Reed-Sternberg cells. Koss6 later noted that all types of lymphomas may make their appearances in sputum or bronchial washings, but accurate identification was probably possible only if the patient had not had prior irradiation. Endobronchial Hodgkin's disease presenting as a primary pulmonary lesion was reported by Seward7 recently, but sputum cytology was negative for malignant cells. The present case is the first recorded to our knowledge of an initial diagnosis of Hodgkin's disease made by sputum cytologic examination.

CASE REPORT

In December 1967, a 17-year-old Caucasian youth was admitted to the Respiratory Disease Unit of La Vina Hospital for Respiratory Diseases with the chief complaint of hemoptysis and a history of abscess cavity in the right lung associated with a 45 pound weight loss. Physical examination showed a chronically ill young man with left axillary adenopathy. The remainder of the physical examination was normal.

X-ray examinations and a review of prednisone films showed a right perihilar mass and a gradually expanding cavitary mass in the right midlung field extending into the middle lobe, lower lobe, and probably upper lobe. Bronchoscopy revealed ulcerative bronchitis on the right. Pulmonary function studies demonstrated a severe restrictive defect due to loss of ventilable lung. There was no evidence of obstructive airway disease.

The results of six sputum concentrates done for tuberculosis were all negative. Skin testing with intermediate and second strength PPD were negative on two occasions. The pathogen D pneumoniae was grown on four occasions from the sputum.

Sputum cytology on two occasions had shown abnormal cells which were thought to represent inflammatory changes; but the possibility of Hodgkin's disease was also suggested. The greatest number of abnormal cells on the sputum cytology smears resembled Reed-Sternberg type cells, and were large and pale with some multinucleated and some multilobular nuclear forms with many large, eosinophilic nuclei. The abundant cytoplasm appeared pale and foamy. A few smaller cells with large, hyperchromatic irregular nuclei were also present.

The patient was advised that the etiology of his pulmonary

*From Huntington Memorial Hospital, Pasadena, and La Vina Hospital for Respiratory Diseases, Alhambra, Calif.
**Director, Respiratory Therapy, Huntington Memorial Hospital and La Vina Hospital for Respiratory Diseases; Associate Clinical Professor of Medicine, University of Southern California, Los Angeles.
†Senior Cytotechnologist, Pasadena Clinical Laboratory and Huntington Memorial Hospital.
Reprint requests: Dr. Eisenberg, 3900 North Lincoln, Alhambra, California 91001

218 EISENBERG, DUNTON

Figure 1. Cytologic preparation: Reed-Sternberg type cell, × 1200.

Figure 2. Cytologic preparation: Abnormal, multinucleated cell with large eosinophilic nuclei, × 1200.
lesion was either a lymphoma or solid tumor and an open biopsy with probable subsequent pneumonectomy was necessary.

In February, 1968, the patient was transferred to another hospital for surgery where the right lung was removed. Multiple sections through the lung showed extensive replacement of the pulmonary parenchyma by a neoplasm presenting a markedly pleomorphic cellular pattern. The most striking cells involved were multinucleated giant cell forms, some of which contained as many as a dozen nuclei. These were of a reticulum type and scattered Reed-Sternberg forms were included. The other cells were predominantly lymphocytes with many eosinophils and frequent plasma cells. Also noted were broad areas of completely destroyed lung, many of which showed necrosis and an overwhelming inflammatory reaction. The tumor in places involved bronchial walls and pushed into their lumina. Immediately adjacent to the bronchus multiple nodes were present showing involvement of tumor similar to that previously noted.

**DISCUSSION**

The young man was initially admitted with a diagnosis of possible tuberculosis based on an expanding cavitary lesion in his right lung and a history of living in many parts of the world with his father who was a career military noncommissioned officer. After *D pneumoniae* was grown from his sputum on four occasions, it was planned to put him on a course of penicillin along with a trial of antituberculosis therapy. The decision for surgery was made, however, after the sputum cytology was reviewed. The cells seen in his sputum were similar to the cells seen in the subsequent right pneumonectomy tissue sections.

**ACKNOWLEDGMENT:** We wish to express our appreciation to Dr. Thomas Kiddie, Director, Department of Pathology, St. Mary’s Long Beach Hospital, for the pathologic description and the opportunity to review the histologic preparation; and to Dr. Arthur Koehler, Department of Pathology, Huntington Memorial Hospital, for the preparation and selection of the photomicrographs.

**REFERENCES**