cases fall in the fifth and seventh decades. In those reports in which sex is noted, there was an even distribution and in those cases in which clinical information is available, intractable congestive heart failure was the major presenting sign. As in the case reported here, there were 11 instances of hemopericardium. Although the heart was cited as the sole organ involved in ten cases, in only one case was there enough information available for this conclusion to be acceptable.

ACKNOWLEDGMENTS: The authors are grateful for assistance in this case from the Armed Forces Institute of Pathology, Washington (AFIP #1225150), and for technical help from Dr. Peter Claremont.

REFERENCES


Pagetoid Spread of Bronchogenic Carcinoma*

Orville F. Grimes, M.D., F.C.C.P.

In addition to bronchial and mediastinal involvement by a carcinoma arising in the left lung in a 78-year-old man, lymphatic invasion of the subcutaneous tissues of the neck was extensive. Malignant cells were also present intradermally, thereby producing a pagetoid type of cellular dissemination similar to that seen in true Paget's disease of extramammary origin.

Carcinoma of bronchogenic origin frequently metastasizes not only to neighboring lymph nodes but also to adjacent intrathoracic structures. Growth in the lymphatic channels of the submucous layer of the bronchial system is frequently found at considerable distances from the primary lesion. These pathways of dissemination are well recognized and metastases occurring in one or more of these fashions are carefully assessed for their presence to determine operability as well as for prognosis. A pagetoid type of metastasis from cancer originating in the lung is a rare pathologic phenomenon. The case of a patient in whom this unusual type of intradermal malignant extension occurred is presented.

CASE REPORT

A 78-year-old retired civil engineer first noticed a diffuse swelling of the submental region in November 1962. Shortly thereafter most of the anterior cervical region and the upper thorax became reddened and firm. Dyspnea on exertion had been present for five or more years but had significantly increased in the preceding six months along with the development of a mild dysphagia. A roentgenogram of the chest in February 1963, showed mottled densities in both lungs, more pronounced on the left side. The left costophrenic sulcus was obscured by a hazy density and the radiologic interpretation was pulmonary edema and pleural effusion caused by cardiac decompensation. Three days prior to entry to the University of California Medical Center, San Francisco, in March 1963, the dyspnea increased so that he was able to sleep only in a sitting position. He had stopped smoking 20 years previously, but there was a history of 40-pack years prior to that time.

The skin and subcutaneous tissue of the anterior neck, chin and upper thorax was thickened and indurated and was purplish-red. Many papules and vesicles were present especially in the submental region. The mass of thickened skin was somewhat mobile and was not tender. The trachea was in the midline, carotid artery pulsations were normal bilaterally, and no discrete lymph nodes could be palpated (Fig 1). The presence of bilateral pulmonary rales and low leg edema confirmed the diagnosis of cardiac failure. The floor of the mouth was not indurated or inflamed; the remainder of the oropharynx was also normal.

*From the Department of Surgery, University of California School of Medicine, San Francisco, California.
PAGETOID SPREAD OF BRONCHOGENIC CARCINOMA

applied normal. A large opaque area involved most of the lingula and the fissure between the upper and lower lobes was thickened. The superior segment of the lower lobe was also involved but the borders of this infiltrate were not so clearly defined. A small pleural effusion was present on the left side (Fig. 2a, b).

Bronchoscopy under general anesthesia was performed on March 14, 1963. The hypopharynx, epiglottis, and the true and false vocal cords were swollen and inflamed. The tracheal mucosa was thickened, edematous and moderately reddened. The carina was considerably broadened. The left main stem bronchus was concentrically narrowed. Its mucosa was thickened and had a beaded appearance suggesting the presence of submucosal infiltration. The biopsy specimen from the left main stem bronchus confirmed the existence of undifferentiated carcinoma in the submucosal lymphatics. A segment of skin, subcutaneous tissue platysma muscle along with a mass of matted lymph nodes was excised from the left submaxillary area. The microscopic study showed anaplastic carcinoma, probably of squamous cell type, which diffusely involved the lymphatics of the dermis, the deep areolar and fatty tissue, lymph nodes, and the left submaxillary gland. The malignant infiltrate in the bronchial specimen was identical with that found in the cervical region. Of special interest is the presence of malignant cells located intradermally, indicating that in addition to bronchial, mediastinal and cervical involvement by the carcinoma arising in the left lung a pagetoid spread of the malignancy occurred as an unusual type of malignant cellular dissemination (Fig. 3a, b, c).

Radiation therapy was administered to the left lung lesion, the mediastinum, and the neck, and nitrogen mustard was given intravenously. The dyspnea improved and the size of the cervical mass decreased. Radiotherapy was given daily on an outpatient basis. While on a visit to his home in rural northern California, the patient suddenly developed severe seizures and passed rapidly into a coma from which he never recovered. Death occurred on April 4, 1963. Permission for an autopsy examination was not obtained.

FIGURE 1. Note the extensive swelling and discoloration of the anterior neck and upper thorax. Papules and vesicles are numerous and diffusely scattered over the area of involvement.

Chest films showed that the bilateral infiltration was greater on the left side. Except for a poorly-defined density probably located in the right middle lobe the right lung

FIGURE 2. The large density on the left in the frontal projection has a somewhat nodular appearance (a). Note the fissural thickening on the lateral projection (arrows) (b).

DIS. CHEST, VOL. 56, NO. 1, JULY 1969
Most authorities are convinced that Paget's disease, regardless of its location, represents a process secondary to an underlying primary carcinoma. The literature, however, contains a number of reports in which extramammary Paget's disease has been noted to be present without an underlying malignancy. In certain instances it is possible that the carcinoma may have been of such small size that it was completely overlooked even with careful study. Frequently the true pathogenesis of the condition is difficult or impossible to clarify since the phenomenon as it affects the skin is usually of long duration by the time its true nature is established. This is specifically true when Paget's disease involves extramammary sites such as the rectum, anus or the vulva. These extramammary lesions occur most often in areas of the body in which a generous supply of apocrine glands exist. Almost all of the reported cases of extramammary Paget's disease have been found either in the axillae or in the perineum. It is generally acknowledged that in these areas, the malignancy originates in the apocrine glands and grows upward to infiltrate the skin surface. As such, the process is identical with the well-known contiguous and lymphatic spread of other types of tumors at their site of origin. The histologic picture is different only in that intradermal metastases occur for some unknown reason as an unconventional mode of lymphatic spread to the skin. Still unexplained is the fact that unlike most malignant processes extending to the skin, ulceration is uncommon in Paget's disease. Pinkus and Gould in their review suggested that Paget's cells in the intradermal location may be associated with an underlying rectal carcinoma. They called attention to the analogy between Paget's disease of the nipple with its subjacent ductal carcinoma and Paget's disease of the perianal skin with its associated rectal malignancy. Green and Epstein, reporting in 1950, discussed a patient in whom no underlying rectal carcinoma could be found. It is of interest to note that the diagnosis and treatment for perianal neurodermatitis of their patient was made seven years prior to surgical consultation.

Pearson and McArt also believed that Paget's deposits are true carcinoma cells and represent secondary intraepithelial metastases from a primary glandular carcinoma regardless of its site of origin. These authors described a patient with primary carcinoma of the apocrine glands in the anal region which had progressed to a state of widespread and generalized body metastases. Their patient was similar to the patient reported here in that the primary apocrine gland carcinoma had spread generally through lymphatic pathways to distant sites as well as to the overlying skin.

Less disagreement exists at the present time regarding the nature of extramammary Paget's disease than was true even a short decade ago. A variety of opinions flourished and varying concep-
Experimental Bronchography by Tantalum Insufflation*

Roberto Llamas, M.D.,**, Juan Ortiz, M.D.,† Andres R. Perez, M.D.,§ and George L. Baum, M.D., F.C.C.P.$

Experimental bronchography with heavy metal tantalum was performed in ten greyhound dogs. The method is simple, produces excellent bronchographic pictures and does not produce pathologic changes.

Since the introduction of bronchography by Jackson in 1918, attempts have been made to find a contrast material which would possess the characteristics of the ideal bronchographic medium. These are: (a) the production of good radiographic contrast and mucosal detail; (b) prompt elimination from the tracheobronchial tree; (c) no alveolar filling; (d) no untoward reaction during or after bronchography; (e) no interference with pulmonary function, and (f) simplicity in its introduction to the tracheobronchial tree.

After the first attempt by Jackson in which bismuth powder was used as the contrast medium, Lynah and Stewart were able to demonstrate lung abscess from bismuth suspension in oil introduced through a bronchoscope. In 1927, Sicard and Forestier introduced the safe use of iodized poppyseed oil (Lipiodol), and bronchography became a routine technique. With the advent of modern thoracic surgery, bronchography has become increasingly important as a valuable aid in precise localization of pathologic changes in the bronchial tree.

The iodized contrast material used at present, however, does not possess all of the characteristics as stated above so that many chest physicians, thoracic surgeons and radiologists have adopted a skeptical attitude toward bronchography as a routine procedure.

Nadel and Wolfe, returning to Jackson's original concept of insufflating a high contrast, non-absorbable material for bronchography, used metallic gold and tantalum in dogs and humans and were able to produce excellent bronchograms without the drawbacks of the iodide substances. They demonstrated through radiologic study that these metals were...