Pulmonary Cryptococcosis
Report of a Case with Surgical Cure*

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Torulosis or cryptococcosis is a chronic disease affecting the lungs, central nervous system, skin, and lymph nodes. One of the earliest cases was described by Busse1 in 1894 who designated the causative organism, saccharomyces. Many names have been applied to this disease which is also widely known as European blastomycosis. The present accepted nomenclature for the etiological agent is cryptococcus neoformans as suggested by the National Research Council.

In 1937, Levin2 reported 60 cases referable to the central nervous system in which the prognosis was extremely poor. The disease ran a chronic course terminating fatally in about five or six months.

Up to the present time, well over a hundred cases have been reported3-5 and it appears from the literature that more are coming to light each year as our knowledge increases in the clinical and diagnostic phases of the disease.

As this is a case report, we feel that it is unnecessary to reiterate the characteristic clinical and pathological features of the disease. These phases are summarized adequately in the Manual of Clinical Mycology6 and elsewhere.

CASE RECORD

J.S., a white male, age 19, was admitted to Hahnemann Hospital May 6, 1943 with no particular complaint; however, he was referred from a sanatorium to the Department of Thoracic Surgery for a mass in the right lower lobe.

Past Personal History: He had the usual childhood diseases. He does not smoke or partake of alcoholic beverages excessively and drinks coffee and tea moderately. In 1941, he worked in a rolling mill where there was a great amount of coal dust, metal dust, and sulfur fumes. His last occupation was as a laborer in a CCC camp in Pennsylvania.

History of Present Illness: On January 2, 1943 he was called for Army induction examination and a mass-like lesion was found in the right lower lobe. He was rejected and asked to return in 2 to 6 months. He

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returned April 3, 1943 and was again rejected, but this time he was advised to go to a sanatorium. At the sanatorium he was studied for tuberculosis; however, all tests proved to be negative.

With the evidence for tuberculosis lacking, he was referred to the Thoracic Surgery Department at Hahnemann Hospital. Physical examination revealed a well nourished, white male. There was no evidence of jaundice, edema, cyanosis, or dyspnea. He was mentally alert and cooperative. Careful assay of all systems revealed no abnormalities. Examination of the chest disclosed no evidence of any lesion to palpation, percussion, and auscultation. The temperature, pulse, and respiratory rates were normal. Laboratory studies were fruitless except for the x-rays which confirmed the previous observations made at the Army induction center and the sanatorium.

The conclusion drawn by the Thoracic Surgery Department was lung tumor, probably bronchogenic carcinoma, and that surgical exploration was indicated. On May 12, 1943 the patient's chest was explored and a right pneumonectomy was performed. Recovery was uneventful and he was discharged on June 7, 1943 and advised to return at regular intervals for re-examination. He has been well with no complaints to the present time—a period of five years and seven months.

Pathological Examination

Gross: Specimen consists of the right lung measuring approximately 24 x 11.5 x 3.5 cm. The upper lobe is poorly aerated but appears grossly normal. The middle lobe is air containing and not remarkable. The lower lobe contains a large palpable, firm, rubbery mass measuring 4.5 cm. in diameter. It approximates very closely to the main median bronchus extending into the surrounding lung parenchyma. The mass on

FIGURE 1
Mass-like lesion in the right lower lobe.
FIGURE 2: Right lung showing large grayish white, rubbery, well circumscribed lesion in the lower lobe.

FIGURE 3: Photomicrograph showing typical granulomatous appearance. Also note tubercle pattern with giant cells. Phloxine methylene blue, X100. — Figure 4: Photomicrograph showing typical capsules containing refractile yeast bodies of cryptococcus neoformans. Phloxine methylene blue, X430.
section is grayish white, well circumscribed, firm, and rubbery. The tracheobronchial tree is not remarkable. One hilar lymph node is slightly larger than normal and on section has a grayish black hue.

**Microscopic Examination** disclosed a typical granuloma exhibiting areas of fibroblastic proliferation and lymphocytic infiltration resulting in a typical tubercle pattern, many of which contained foreign body giant cells. No evidence of caseation was noted. Many of the giant cells contained vacuoles. Scattered throughout the lesion there were noted large capsular spaces containing small, round refractile bodies, significant and suggestive of a fungus disease.

It was felt that this was either an atypical Boeck's sarcoid or a fungus disease. X-ray studies and the clinical findings did not support a diagnosis of Boeck's sarcoid and material was forwarded to Dr. Roger D. Baker of Duke University. His conclusions were: "The diagnosis of cryptococcosis is reasonably secure on the histopathologic study without culture in this case and I am listing it as No. 66 in our Fungus Disease registry." We have recently had a necropsy case of pulmonary and meningeal cryptococcosis and on comparative studies, the pulmonary lesions are very similar.

**Comment**

Analysis of many cases in the literature clearly indicates that cryptococcosis is a highly fatal disease. Statistical study of these cases disclosed that an extremely high percentage is of the meningitic type. The fungus gains entrance to the body through the respiratory tract.

Beck and Voyles found no beneficial effect from potassium iodide and sulfonamides in experimental torulosis of rats, guinea pigs, rabbits and dogs. Hobby, Meyer and Chaffee demonstrated in vitro sensitivity of the organism to penicillin; however, Harford reported a case treated with penicillin with no beneficial results. Mezey and Fowler claim beneficial results from 2 per cent alcohol intravenously; however, Voyles and Beck reported one case in which the course of the disease has been observed for seven years. Burger and Morton quoted several cases of apparently localized torulosis with cure. In these cases, the following sites were involved: muscles and spine, inguinal abscess, tongue, nasopharynx, and skin. These cures were allegedly affected by curettement, iodides, and x-ray therapy. It is to be noted none of these presented any manifestation of pulmonary involvement.

Pulmonary cryptococcosis without meningeal involvement is unusual. Sheppe reported a fatal case of pulmonary torulosis with necropsy findings. The brain and meninges, however, were not examined. Hardaway and Crawford reported a case of pulmonary torulosis which they observed over a period of 15 months without meningeal involvement. Their roentgen studies, however, show progressive disease in both lungs over this period of time,
yet the patient was not too ill on discharge except for expectoration and cough. Dormer et al. in 1944 reported a case of cryptococcosis of the right lung in a 12 year old male child. The right lung and mass were removed. Postoperatively, however, meningeal symptoms developed and positive animal inoculation in the guinea pig was obtained from the spinal fluid. The meningeal symptoms responded to large doses of iodides and the patient was discharged two weeks later. It is suggested that if the disease is local and can be diagnosed and removed before meningeal spread has occurred, the patient may be cured. It is recommended that pulmonary lesions from which no tubercle bacilli can be isolated, be carefully studied for fungi.

SUMMARY

A case of pulmonary torulosis in a 19 year old white male is reported. The lesion presented as a granulomatous mass in the right lower lobe suspected of being tuberculosis or neoplasm. Pneumonectomy was performed with an uneventful postoperative course. The patient is perfectly well and at no time in the elapsed five years and seven months has there been evidence of meningeal spread. The left lung remains negative as of July 1948.

RESUMEN

Se informa sobre un caso de torulosis pulmonar en un joven blanco de 19 años. La lesión se presentó como una masa granulomatosa en el lóbulo derecho inferior, que se sospechó ser tuberculosis o neoplasma. Se llevó a cabo la neumonectomía con una curso postoperatorio sin novedad. El paciente está perfectamente bien y en los cinco años y siete meses que han pasado no ha mostrado ningún signo de extensión a las meninges. Hasta el mes de julio de 1948 el pulmón izquierdo sigue bien.

REFERENCES


7 Baker, Roger D., Duke University, School of Medicine, Durham, North Carolina: Personal Communication.


