CYSTIC CAVITATION FOLLOWING CHEMOTHERAPY OF ACUTE TUBERCULOSIS.*

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ONE of the more spectacular results of the efficacy of isoniazid as a chemotherapeutic agent is the formation of multiple large thin-walled cysts of the lung as an acute lesion undergoes healing. Several reports have appeared in the French literature in which the origin from acute bronchopneumonic disease with or without cavitation is described (Gaby et al., 1953); and isoniazid dubbed médication bullogène (Bernard and Carraud 1953). Johnson and Hewitt (1954) described the occurrence of cyst-like cavities during isoniazid therapy in twenty-two patients of whom twenty were negroes. These authors did not note a relation to type or chronicity of disease. Rappaport in an article on "Chemotherapy and Vanishing Lungs" discusses the cysts of tuberculous origin in relation to other "air-space" abnormalities such as emphysema. Berthrong (1956) ably summarises present knowledge pointing out that the first case may have been described in 1947, in one of the earlier reports on the effect of streptomycin on the course of tuberculosis by Florey and co-workers (1948).

The phenomenon was not seen in any cases treated at the Western Regional Sanatorium prior to the introduction of isoniazid in 1952; and it is our purpose to describe the clinical and pathological features of fifteen cases.

Case Reports.

CASE 1: P. R. Aged 21—Male. Admission radiograph shows bilateral bronchopneumonic disease of the right upper and mid zones.

A large apical cavity was present on the left side and there was probably cavitation on the right side.

After six months' chemotherapy, including isoniazid, the broncho-pneumonic disease cleared and patient was left with a definite cystic cavity at the site of the original acute cavity. This cystic cavity was best seen on tomography.

Specimen: Large cystic cavity lined by glistening membrane with smaller honeycomb cavities beneath it. Small pores in cavity wall. No obvious bronchial communication. No gross residual tuberculosis. Histologically, cavity lined by fibrous membrane; honeycomb cavities lined by bronchial mucous membrane. A few microscopic nodular tuberculous areas.

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CASE 2: J.A. Aged 18—Male. Initial radiograph shows extensive bilateral broncho-pneumonic disease with probable cavitation in the right upper zone.

After three months' chemotherapy, including isoniazid, the broncho-pneumonic elements were clearing satisfactorily, but there appeared to be definite cystic changes in the right upper zone.

After a further nine months' chemotherapy, the right-sided lesion had cleared completely, but the whole of the left upper lobe was replaced by a giant cystic cavity.

This patient developed an acute non-tuberculous infection of the cyst with a fluid level. It responded to penicillin, and the radiological appearance remained the same till left upper lobectomy was performed.


CASE 3: J.C. Aged 20—Male. Initial radiograph shows broncho-pneumonic disease including all lung fields with definite cavitation in the right mid zone, right base and left mid zone.

The response to chemotherapy, including isoniazid, was satisfactory, with much clearing of the broncho-pneumonic disease; cystic cavities were, however, becoming evident in the right mid zone and right base.

After further chemotherapy, the basal cysts disappeared, the mid zone cysts regressed and a giant cyst appeared in the right upper lobe. This picture remained unchanged till right pneumonectomy was performed.

This case demonstrates well the fact that once these post-antibiotic cysts have formed, their further course is dictated by local mechanical factors, and not by chemotherapy.

Specimen: Right pneumonectomy: Large thin-walled cystic cavities at apex of destroyed fibrosed lung. No demonstrable bronchial openings or recent caseation. Cavity wall granulomatous but non-caseous.

CASE 4: A.D. Aged 17—Female. Admission radiograph shows bilateral broncho-pneumonic disease with cyst-like cavities in both apices, and the left midzone, following six months' chemotherapy which included isoniazid.

After a further six months' chemotherapy, the right apical cavity disappeared, but the left cystic cavities remained till left upper lobectomy and left dorsal segmentectomy were performed.

Specimen: Two cystic cavities present. No obvious bronchial communications. Granulation tissue in cavity wall. Residual tubercles present, thought to be regressing.

CASE 5: E.H. Aged 21—Female. Admitted with bilateral broncho-pneumonic disease and large left upper zone cavity. After nine months' chemotherapy, broncho-pneumonic elements cleared, but a large cyst-like cavity was now present at the site of the original cavity. This persisted till left upper lobectomy was performed.

Specimen: Large single cystic cavity with minute pores communicating with adjacent bronchiectatic complex. Cavity wall fibrous but persistent resolving broncho-pneumonic lesions remain.

CASE 6: T.D. Aged 17—Female. Admitted with bilateral broncho-pneumonic disease and cavitation in the left upper zone. After one year's chemotherapy, broncho-pneumonic elements disappeared, but the left lung was completely replaced by giant cystic cavities.

Specimen: Left pneumonectomy: Lung almost totally replaced by coalescing giant cystic cavities. Cavities filled by injection but openings not visible. No histologically demonstrable residual tuberculosis.

CASE 7: M.O'M. Aged 16—Female. Admitted with bilateral broncho-pneumonic disease. Definite cavity present in the right mid zone with possible minute cavitation in the left upper zone.

After one year's chemotherapy, broncho-pneumonic elements had cleared completely and the right mid-zone cavities had closed. The left upper zone was completely replaced by cystic cavities. Pneumonectomy was avoided in this case by ligating the bronchus leading to a cystic cavity in the dorsal lobe. This patient has remained well.

Specimen: Left upper lobe replaced by series of intercommunicating cystic cavities with widely patent bronchial openings. No residual tuberculosis. A few pinpoint encapsulated caseous lesions in remaining parenchyma.

CASE 8: W.N. Aged 37—Male. Admitted with bilateral upper zone disease of a broncho-pneumonic type. Probable cavity present in the left upper zone.

After one year's chemotherapy, broncho-pneumonic elements cleared but cystic cavity present at site of original cavity had considerably increased in size. Cavity remained unchanged till operation.

Specimen: Segmentectomy: Double cystic cavity present. Pinpoint communication with bronchus. Small caseous cavity present in addition.