A 41-year-old white man was hospitalized in 1963 for evaluation of a loculated right pleural effusion (Fig 1). In 1953, thoracentesis had been performed twice on the right following abnormal findings on chest film; this revealed yellow fluid. He had remained well until three weeks prior to this admission when he experienced anorexia and malaise.

He was afebrile and showed only decreased breath sounds over the right base. Tuberculin test was not done. Thoracentesis resulted in the removal of 600 ml of clear serous fluid containing numerous cholesterol crystals and 200 white cells per mm³ with a differential count of 60 percent lymphocytes and 40 percent neutrophils. Smear and one culture of the fluid were negative for acid-fast bacilli. No treatment was given.

The patient remained well until 1969, when he developed a febrile illness. His temperature was 101°F and there were rales and signs of consolidation at the right lung base. A new chest film was obtained (Fig 2).
Diagnosis: Tuberculous Empyema and Pneumonia

Figure 1 shows a loculated right pleural effusion with calcium in its wall. Figure 2 reveals an extensive dense infiltrate surrounding the encapsulated fluid. Sputum smear now (1969) showed innumerable acid-fast bacilli. Thoracentesis was performed with removal of 30 ml of opaque yellow fluid. This revealed several acid-fast organisms per high power field, a few white blood cells, and numerous cholesterol crystals.

Tuberculous empyema has become a relatively rare entity. Snider and Saleh,1 in a recent series of 92 cases of empyema, recovered tubercle bacilli only twice in a hospital treating at least 100 tuberculosis patients a year. It is generally accepted that this decreased incidence is due to the advent of tuberculostatic agents and the abandonment of artificial pneumothorax as a therapeutic procedure. Indeed, when the latter maneuver was widely practiced, complicating tuberculous empyema developed in 5 to 20 percent of all patients. It is important to diagnose tuberculous empyema early, since vigorous therapy must be instituted if serious consequences are to be avoided.

In 1963, when this patient presented with a loculated pleural effusion, the presence of cholesterol crystals was given undue significance, and diagnostic and therapeutic measures were not aggressively pursued. Fluid containing cholesterol crystals can be obtained from any longstanding walled-off area, such as dermoid cyst, intrapulmonary cyst, or loculated pleural effusion.2,3 These crystals signify nothing more than chronicity of the process, and the nature of the underlying disease must still be assiduously sought.

Calcium in the wall of a loculated pleural effusion coupled with the history of serous pleural effusion ten years earlier should have raised the question of tuberculous etiology. The single negative microscopic and cultural examination of the pleural fluid were not adequate to exclude this possibility since it is well known that smear and cultures are positive in only 25 percent of tuberculous pleural effusions.4

A needle biopsy of the pleura might have established the diagnosis in 1963; if not, thoracotomy and decortication should have been considered. As a minimum, a tuberculin test should have been done and antituberculosis chemotherapy considered if the patient was a positive reactor.

A persistent loculated pleural effusion may become infected at any time, but we believe that the serous effusion found in this patient in 1963 was due to tuberculosis of low grade activity. Subsequently, the process became more aggressive and developed into a tuberculous empyema. The empyema then ruptured into a bronchus producing extensive tuberculous pneumonia. The latter event is admittedly conjectural, since an air-fluid level was never noted in the empyema.

References

Reprint requests: Dr. Gordon L. Snider, VA Hospital, Boston 02130

The Indispensable Iodine

The element of iodine was discovered by the French apothecary Courtois in 1811. Baumann (1895) discovered the presence of iodine in the thyroid glands of animals. Prior to this latter event Murray (1891) used a glycerin extract of the thyroid glands of animals to treat a case of myxedema. It was later observed that the activity of the gland in the treatment of cases of hypothyroidism was a function of its iodine content. The explanation of this observation became apparent on Christmas Day, 1914, when Kendall isolated crystalline thyroxin from the thyroid glands and showed that the molecule contained iodine. Thyroxin (3, 5, 3', 5'-tetraiodothyronine) and triiodothyronine (3, 5, 3'-triiodothyronine) are the 2 hormones of the thyroid gland.