ABSTRACT OF DISCUSSION

DR. RUSSELL S. BOLES, Philadelphia: Dr. Fitzgibbon's paper reminds one of the indispensability of a good history and a physical examination in the diagnosis of disease. Those two diagnostic factors are being more and more discarded in favor of other means of diagnosis. Here they are demonstrated to be absolutely essential. I hope physicians will see more good, sound clinical papers of this type. This has been a learned discourse on cardiospasm, esophageal spasm and other spasms without any reference to sex; Dr. Fitzgibbon's paper shows that one may have good, healthy, normal ideas about the opposite sex without being doomed to have some disease or other. He also made no reference—which was pleasing to me—to personality and type; he did not say that if one happens to have a certain type of personality or a certain build or disposition he is susceptible to one of these diseases. Concerning the diagnosis of hiatus hernia, I suppose the most important symptomatic indication in these persons is substernal or epigastric pain, or at least discomfort, particularly when they lie down. I think any patient who ever mentions that symptom should at once be suspected of having hiatus hernia, and, as Dr. Fitzgibbon said, patients should always be carefully examined for it in the erect and especially in the horizontal position, perhaps more than once if it is not detected the first time. Another point of practical importance is that physicians sometimes unfortunately discover, after they have subjected a patient to a gallbladder operation, an operation for an ulcer or appendectomy, that they conscientiously could not say that what they had found justified the operation or caused the symptoms of which the patient complained. Where such a situation is encountered during operation, it is important that the diaphragm be carefully examined to see whether, by any chance, hiatus hernia may have been overlooked, even though horizontal roentgen examinations had been made.

DR. EDWIN BOROS, New York: Originally, with the flexible gastroscope, it was hoped that one could see lesions around the cardia. When they are seen, one cannot be sure because of the inability to perform biopsies. It is perfectly possible, with the advent of Dr. Benedict's combination gastroscope and biopsy apparatus, that lesions in this region may be diagnosed. Obstructions at the diaphragm do not, however, permit the passage of a gastroscope, and one must resort to esophagoscopic examination. For anatomic reasons, such is not always possible, since the plane of the stomach lies at an angle of 45 degrees to that of the esophagus; in addition to that, considerable spasm and obscuring of the lumen may take place. That is one reason why it is essential, if for nothing more than for the safety of the patient, that the physician have recourse to the flexible esophagoscope in order that better methods of diagnosis be available for these patients. I should like to ask Dr. Fitzgibbon whether he has had any experience with perforation of the esophagus.

DR. JOHN H. FITZGIBBON, Portland, Ore.: Simulation of the distress of coronary artery disease by hiatus hernia may be confusing. It is well to remember that the conditions may coexist. As has been pointed out, the distress of hiatus hernia may be induced or aggravated by the patient's lying down, particularly after a meal. Generally, exertion such as walking or climbing stairs will not induce distress because of the dependent position of the stomach. Trauma may be an important factor in hiatus hernia. In 1 patient who had been successfully operated on, recurrence of the hernia and return of symptoms developed after the patient fell down some stairs. My experience with perforation of the esophagus has usually followed attempts by someone else to dislodge foreign bodies by passage of bougies or stomach tubes. I cannot overemphasize the danger of blind passage of instruments for this purpose. Dr. Boros was interested in a sign I have observed in perforation of the esophagus. When the patient's head and neck are extended, he is told to take a deep breath. Stretching of the esophagus by this maneuver may induce pain at the site of the perforation due to localized mediastinitis.

SUBACUTE THYROIDITIS

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and
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Subacute thyroiditis can be defined as an acute or chronic self-limited inflammation of the thyroid gland, which is probably initiated by a virus infection and prolonged by a granulomatous reaction to displaced or perverted colloid.

SYNONYMS

Many names have been given to the various inflammatory lesions involving the thyroid gland. Subacute thyroiditis, for example, has also been called pseudotuberculous thyroiditis, tuberculous thyroiditis, sclerosing tuberculosis, struma granulomatosa, granulomatous thyroiditis, giant cell thyroiditis, pseudo-giant-cell thyroiditis of de Quervain, struma fibrosa-giant cell variant, acute simple, acute noninfectious and acute nonsuppurative thyroiditis. Other types of thyroiditis such as struma lymphomatosa (Hashimoto) and Riedel's struma are distinct entities unrelated to subacute thyroiditis and are not considered in this study.[1]

CLINICAL ASPECTS

The clinical course of subacute thyroiditis is variable but two rough categories can be recognized: (1) the acute fulminating type with fever, pain, exquisite tenderness and severe systemic symptoms; and (2) the chronic type, with little if any fever, slight pain, slight tenderness and insignificant systemic symptoms. Pathologically, however, and in response to therapy these two types are identical.[1] The acute type has generally been named acute nonsuppurative thyroiditis and treated conservatively; the chronic type has usually been called granulomatous or giant cell thyroiditis and treated by thyroidectomy.

Between these two extremes there are many cases which present all combinations and degrees of local and systemic reactions and which frequently are not recognized because of the confusing clinical picture and the lack of localizing signs at the time the patient is examined. Because subacute thyroiditis is essentially a self-limited disease which eventually subsides without demonstrable damage to the thyroid, because thyroidectomy is neither necessary nor desirable in its treatment and because the symptoms respond specifically to roentgen treatment it is important to recognize subacute thyroiditis and treat it effectively.

Etiologic Factors.—The etiologic basis of subacute thyroiditis is unknown. No specific causative organism has been isolated.[2] However, it has been observed after infections of the upper part of the respiratory tract,[3] measles,[4] malaria,[5] scarlet fever[6] and other diseases.[7] The reported high incidence of acute upper respira-

From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

1. Crile, G., Jr.: Practical Aspects of Thyroid Disease, Philadelphia, W. B. Saunders Company, 1949, p. 307-317.
2. Womack, N. A.: Thyroiditis, Surgery **16**: 770-782 (Nov.) 1944.
3. (*a*) Bowles, A. J.: Thyroiditis, Northwest Med. **43**: 225-227 (Aug.) 1944. Clute, H. M., and Smith, L. W.: Acute Thyroiditis, Surg., Gynec. & Obst. **44**: 23-29 (Jan.) 1927. (*b*) Cochrane, R. C., and Nowak, S. J. G.: Acute Thyroiditis with Report of Ten Cases, New England J. Med. **210**: 935-942 (May 3) 1934. (*c*) McQuillan, A. S.: Thyroiditis, Tr. Am. A. Study Goiter, 1938, pp. 212-219.
4. Candel, S.: Acute Nonspecific Thyroiditis Following Measles: Report of a Case, U. S. Nav. M. Bull. **46**: 1109-1113 (July) 1946.
5. Sein, M.: Acute Non-Suppurative Thyroiditis, Lancet **2**: 673 (Sept. 17) 1938.
6. Jensen, D. R.: Acute Thyroiditis Complicating Scarlet Fever, Am. J. Surg. **60**: 301-303 (May) 1943.
7. Higbee, D.: Acute Thyroiditis in Relation to Deep Infections of the Neck, Ann. Otol., Rhin. & Laryng. **52**: 620-627 (Sept.) 1943. Cochrane and Nowak.[3b]

tory infections preceding the onset of subacute thyroiditis suggests the possibility of a filtrable virus as an etiologic agent.[8] To date no virus studies or attempts to isolate a virus in subacute thyroiditis have been reported. The prolonged chronic inflammatory process observed in the thyroid may be the result of a foreign body reaction to colloid which escapes into tissue spaces when the cells lining the follicles are damaged by the virus infection.

Incidence.—Until recently only a few cases of subacute thyroiditis have been recorded. Giordanengo[9] in 1938 stated that only 54 cases had been reported since 1904. In the three year period 1946 through 1948, 38 patients with subacute thyroiditis were seen at the Cleveland Clinic, as compared with only 27 patients in the ten year period 1936 through 1945. It is not known whether this represents an actual increase in the frequency of the disease or is due to better recognition.

Age and Sex.—Subacute thyroiditis occurs most commonly in patients between 30 and 50 years of age. In this series of 38 cases the mean age was 42 (table 1). Only 5 of the 38 cases occurred in men.

Local Symptoms.—A sore throat, severe pain on swallowing and exquisite tenderness of the thyroid characterize the onset of thyroiditis. Pain usually radiates behind the ear on the affected side and occasionally to the occiput, face or jaw. Occasionally the radiation may be the dominant symptom. One patient with pain in the jaw of three weeks' duration had the wisdom tooth on the affected side extracted without relief. When the patient was treated for subacute thyroiditis by roentgen radiation the pain disappeared within seventy-two hours. Another patient with a persistent earache had received local treatment of the ear and chemotherapy for three weeks. When the patient was examined by us the history and observations were typical of subacute thyroiditis. A tonsillectomy was performed elsewhere on a third patient for a supposed chronic sore throat.

Fourteen patients noted a sore throat as an early symptom but were not aware that the thyroid was involved. Whether the disease started as a pharyngitis and later localized in the thyroid or whether it was a thyroiditis from the first is not clear. When questioned directly most patients remembered that they had pain on swallowing early in the course of their illness. Since many patients are not seen until a considerable time after the onset, it is extremely difficult to determine whether the pain was due to a sore throat or a sore thyroid. We believe that in most cases it is a thyroiditis from the onset (table 2).

Systemic Manifestations.—Fatigue, weakness and lassitude are prominent constitutional manifestations of subacute thyroiditis and are often so severe as to be incapacitating. Temperatures often rising to 101 F., and occasionally to 104 F., accompany the acute phase, and a low grade fever may be prolonged for weeks or even months. Although many of our patients were seen in the chronic or subsiding phase, in most instances it was possible to elicit a history of fever at the onset. Of the 23 patients seen in the more acute stage of subacute thyroiditis the average morning temperature was 99.4 F. Night sweats and chills were sometimes noted.

Eleven patients lost weight, the average loss being 10½ pounds (4.8 Kg.). Symptoms of pressure resembling globus hystericus may be experienced, but objective evidences of tracheal or esophageal compression were not observed. In 7 patients there were symptoms simulating hyperthyroidism such as nervousness, tremor, weakness, excessive perspiration, heat intolerance and palpitation. In this group, however, the average basal metabolic rate was only plus 9 per cent and ranged from minus 8 to plus 28 per cent. The patient with the last-mentioned rate was free of symptoms two weeks after roentgen therapy, and two months later the basal metabolic rate had fallen to plus 10 per cent.

Signs.—The thyroid gland is firm and usually diffusely enlarged; it is extremely tender. Although the entire gland usually is involved, the disease may appear

TABLE 1.—*Distribution by Age of 38 Cases of Subacute Thyroiditis*

Age Group	Number of Cases
20 to 30	2
30 to 40	17
40 to 50	12
50 to 60	5
60 to 70	1
70 to 80	1

TABLE 2.—*Chief Complaints*

Chief Complaint	Number of Cases
Sore throat	9
Sore neck	6
Swelling in neck	4
Pain and swelling in neck	3
Lump in throat	3
Sore lump in neck	2
Nervousness	2
Thyroiditis	1
Pain in thyroid	1
Goiter	1
Pain in ear	1
Pain in jaw	1
Pressure in throat	1
Weakness and fatigue	1
Hot flushes	1
Menopause	1

as a localized process involving only the isthmus or part of a lobe. In the present series 7 instances of unilateral involvement were noted. Occasionally the disease may continue to spread and progressively involve the remainder of the gland. To this phenomenon the names "creeping" or "migratory" thyroiditis have been applied.[10]

Usually the thyroid is enlarged to only one and one-half or two times its normal size, but it is readily palpable because of its hardness. The tenderness is variable and in the acute cases may be so exquisite that it is impossible to examine the thyroid. In chronic cases tenderness may be absent, although the patient usually remembers that there was some tenderness at the onset.

The pulse rate is uniformly elevated in the acute form but in the chronic type may be normal. In the acute cases the average pulse rate was 103, in the chronic 84.

8. (*a*) Schilling, J. A.: Struma Lymphomatosa, Struma Fibrosa and Thyroiditis, Surg., Gynec. & Obst. **81**: 533-550 (Nov.) 1945. (*b*) Crile.[1]
9. Giordanengo, G.: Acute Non-Suppurative Thyroiditis, abstracted, Lancet **1**: 1144 (May 14) 1938.
10. King, B. T.: Thyroiditis, West. J. Surg. **41**: 391-398 (July) 1933. Crile.[1]

Diagnosis.—The diagnosis of subacute thyroiditis is predicated on one's finding a firm and tender thyroid gland. When the entire gland or one entire lobe is uniformly involved the diagnosis usually is clear. In the chronic phase, however, and especially when the thyroid is asymmetrically involved, it is difficult to establish the diagnosis until careful questioning reveals a history of sore throat, persistent pain in the ear or jaw, or pain and tenderness over the thyroid at the onset of the disease. The presence of systemic symptoms further confirms the diagnosis. Despite the fact that the affected lobe of the thyroid has a characteristic firmness and retains its normal shape, the diagnosis is frequently missed. In table 3 are listed the mistaken diagnoses made by the first examiner. There were 15 errors in 38 cases.

TABLE 3.—*Errors in Diagnosis on First Examination*

Errors in Diagnosis	Number of Cases
Nodular goiter	6
Carcinoma of the thyroid	3
Nodular goiter with hyperthyroidism	1
Neuralgia of the jaw	1
Graves' disease	1
Myositis of the neck	1
Nonspecific thyroid tenderness	1
Pharyngitis	1

Sedimentation Rate.—The sedimentation rate is consistently and greatly elevated in subacute thyroiditis.[1] A rise in sedimentation rate was found in 15 consecutive patients, with all but 3 showing extremely high elevations. The sedimentation rates in these cases are among the highest recorded and are comparable in height and consistency to those observed in acute salpingitis.

Radioactive Iodine.—In subacute thyroiditis the thyroid gland takes up little or no radioactive iodine. Tracer studies show low uptakes, usually in the neighborhood of 5 per cent and averaging 9.5 per cent compared to 30 to 50 per cent take-up by normal thyroids and a 60 to 90 per cent take-up in hyperthyroidism. In 5 of 8 consecutive cases the take-up was less than 5 per cent, in 1 case 18 per cent, in 1, 20 per cent and in 1 patient with unilateral involvement 30 per cent. This low uptake could be explained either by (1) damage to the thyroid epithelium by the virus infection or (2) absorption of the preformed colloid which had escaped into the tissue spaces. The latter hypothesis would best explain the systemic symptoms simulating hyperthyroidism as well as the fact that the uptake of I^{131} is low even when only one lobe is involved. The rapid absorption of performed colloid could produce a clinical picture similar to that caused by ingestion of desiccated thyroid.

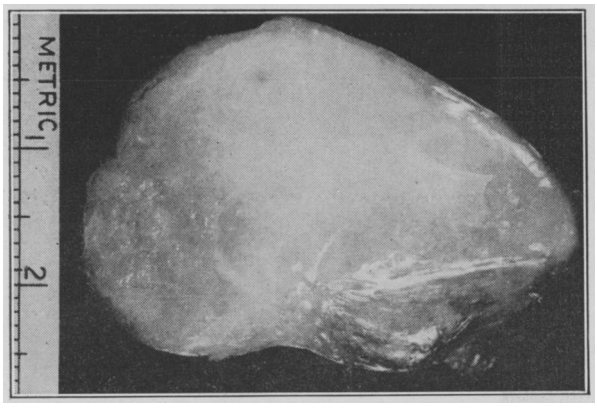

Fig. 1.—Cut surface abnormally white and avascular; turnip-like consistency.

Fig. 2.—Note focal accumulation of polymorphonuclear leukocytes forming microabscess. Large follicle containing aggregation of histiocytes is also visible. Few acini remain (× 70).

Other laboratory tests are of little value. The white blood cell count is not elevated. The basal metabolic rate is not materially affected, but occasionally it will be as high as plus 28 per cent. In three fourths of the cases the basal metabolic rates were in the normal range of minus 10 to plus 10 per cent.

PATHOLOGY

Gross Appearance.—The inflammatory reaction usually involves the entire thyroid but may effect only a portion of a lobe, simulating a solitary adenoma. The occurrence of subacute thyroiditis in an adenomatous or previously abnormal gland is unusual. Only 3 of the 38 patients in this series had noted the presence of a goiter previous to the onset of thyroiditis.

There is moderate enlargement of the thyroid up to two or at most three times its normal size. The capsule is thin and has a pale, glistening appearance. On cut section the involved area is seen to be abnormally white, avascular, hard but pliable and of a turnip-like consistency (fig. 1). In the past pathologists have often classified these specimens as Riedel's struma, disregarding the fact that in subacute thyroiditis the inflammatory process is limited to the thyroid whereas in Riedel's struma there is extensive involvement of all the surrounding structures.

Microscopically the picture is primarily that of a foreign body reaction, fibrosis,[11] degeneration and exudation. The connective tissue elements are increased, with collagenous trabeculations between the thyroid plates and proliferation of interfollicular

11. Hazard, J. B.: Personal communication to the authors. Schilling.[58]

stroma. The acini are decreased in size and number; the epithelial cells are mostly cuboidal and show various stages of disintegration. The degenerating follicles contain cellular debris, small amounts of colloid, collections of histiocytes (fig. 2) and an occasional giant cell.

Scattered foreign body giant cells phagocytize small rounded masses of colloid (fig. 3), and there are numerous focal areas of granulomatous reaction consisting of histiocytes and foreign body giant cells. This tubercle-like arrangement of the histiocytic elements (fig. 4) has been responsible for the terms pseudotuberculous, granulomatous thyroiditis and giant cell thyroiditis. Colloid particles or accumulations of polymorphonuclear leukocytes may be found at times in the central portion of the tubercle. Caseous necrosis is not seen.

In the cellular exudate polymorphonuclear leukocytes are prevalent and are interspersed with lymphocytes, plasma cells and histiocytes. Microabscesses are noted occasionally (fig. 2).

Needle Biopsy.—The diagnosis in questionable or obscure cases may be greatly facilitated by biopsy. Employment of the Vim®-Silverman liver-biopsy needle [12] has obviated the need for surgical exposure of the thyroid. This instrument has reduced the operation to a simple office procedure taking only a few minutes and leaving no scar. A small core of tissue 1 to 2 mm. in diameter and up to 2 cm. in length is obtained (fig. 5). It has proved valuable in confirming the diagnosis in such thyroid diseases as

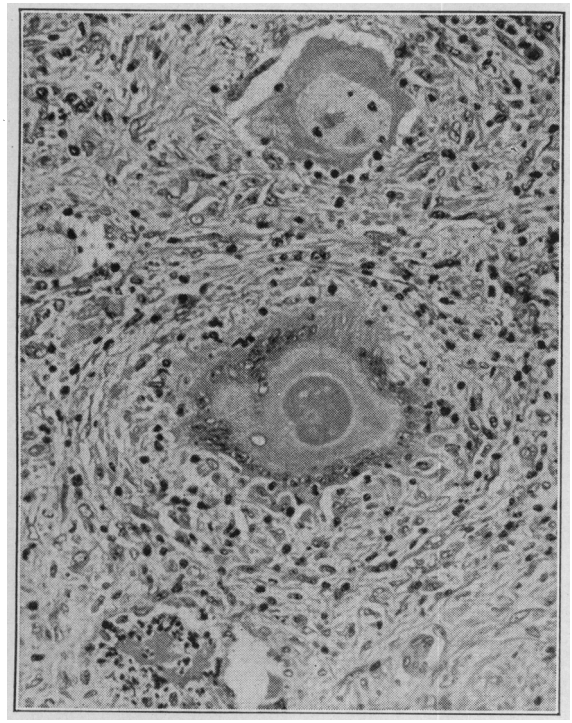

Fig. 3.—Large giant cell in the central portion contains small rounded mass of colloid (× 200).

subacute thyroiditis and struma lymphomatosa, and its use in over fifty biopsies of the thyroid has been attended by no complications. In 7 cases the clinical diagnosis has been confirmed by this method, and in all 7 the response to roentgen therapy has been prompt and complete.

12. Manufactured by the MacGregor Instrument Company, Needham, Mass.

TREATMENT

Until recently the classic treatment of the acute type of subacute thyroiditis has consisted of bed rest, sedatives and ice packs to the thyroid until the acute symptoms subsided. Iodine, sulfonamide compounds and antibiotics have proved no more effective than the

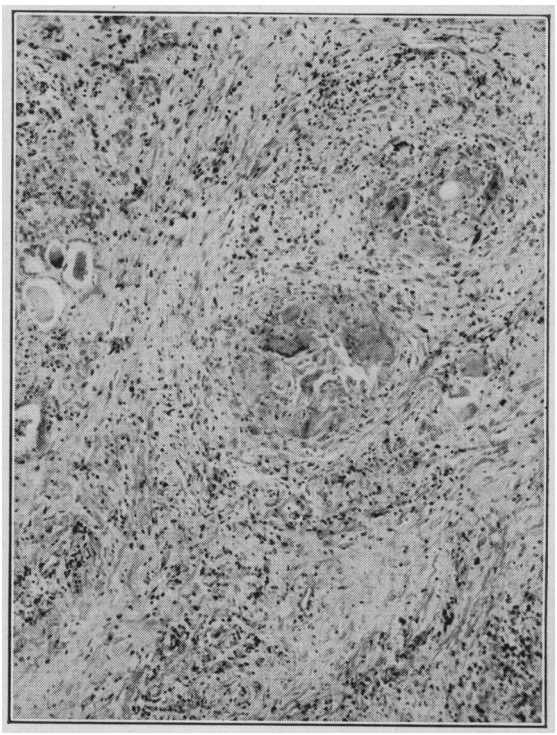

Fig. 4.—Two pseudotubercles contain giant cells with considerable surrounding fibroplasia (× 70).

conventional treatment. King and Rosellini [13] have reported favorably on the use of thiouracil. Only in severe or persistent cases was thyroidectomy recommended. For those patients seen in the chronic phase (the so-called pseudotuberculous, granulomatous or giant cell thyroiditis in which the leading sign was a firm but only slightly tender enlargement of the thyroid) thyroidectomy usually was advised.

Roentgen Treatment.—For the past ten years roentgen therapy has been the standard treatment of subacute thyroiditis at the Cleveland Clinic, and its results have been consistently good.[1] The only other references to roentgen therapy that we have been able to find were those of Young,[14] who mentioned its use in 2 cases but did not describe the results, and Schilling,[8a] who said that the effect might be sufficient to warrant its use although he did not report any cases in which it had been tried. Marshall [15] recently advised against the use of roentgen rays for fear that fibrosis would be induced by the irradiation and might result in constriction of the trachea and destruction of normal thyroid tissue. However, it seems unlikely that roentgen therapy in doses of 800 r would cause such serious changes or that it would cause more disturbances of thyroid anatomy and function than thyroidectomy, which has been advocated in the past.

Thirty-five patients were treated with total dosages ranging from 250 to 2,000 r, averaging 800 r, given in

13. King, B. T., and Rosellini, L. J.: Treatment of Acute Thyroiditis with Thiouracil (Thiourea Derivative): Preliminary Report, J. A. M. A. **129:** 267-268 (Sept. 22) 1945.

14. Young, T. O.: Inflammatory Disease of Thyroid Gland, Minnesota Med. **23:** 105-111 (Feb.) 1940.

15. Marshall, S.; Meissner, W. A., and Smith, D. C.: Chronic Thyroiditis, New England J. Med. **238:** 758-766 (May 27) 1948.

daily doses of 100 to 150 r. Only 2 patients received more than 1,000 r as an initial course. Response to treatment was uniformly good and usually dramatic. Many patients were completely relieved of pain after the first or second treatment, but in others the pain subsided more gradually. Fourteen patients obtained complete relief within a week, and 9 showed a striking diminution in the size of the gland in the same time. Four considered themselves entirely well after the fifth treatment. One patient gave a history of persistent pain in the neck for a year, yet within two weeks after initiation of treatment the symptoms had disappeared.

As nearly as could be estimated by progress examinations the pain and tenderness of the thyroid and the systemic symptoms associated with the thyroiditis had disappeared on the average by the thirteenth day, and at this time the thyroid was smaller and softer. By the end of a month the thyroid was no longer palpable, even in chronic cases in which the thyroid had been enlarged for many months before treatment.

In 6 cases after a short remission induced by roentgen therapy the symptoms and signs of thyroiditis recurred in a milder form. The average interval between attacks was six weeks. A second, less intensive, course of roentgen therapy was given to 5 patients, all of whom responded rapidly after an average of four treatments of 150 r. Two considered themselves cured after five days. Two others were perfectly well when seen one and three months later. Residual tenderness remained in 1 hypersensitive patient despite two courses of roentgen radiation totalling 1,750 r. Only the left lobe appeared to be involved, and a left lobectomy was performed. The diagnosis was subacute (pseudotuberculous) thyroiditis with numerous microabscesses. After operation pain developed in the other lobe and 300 mg. of propyl thiouracil [13] was given daily for one week without relief. The pain was relieved by procaine block of the contralateral stellate ganglion and did not recur. This case represents the only definite failure of roentgen therapy in the entire series; however, surgical measures and propyl thiouracil therapy also failed to give relief, and the causalgic nature of the pain was established by permanent relief following a procaine block.

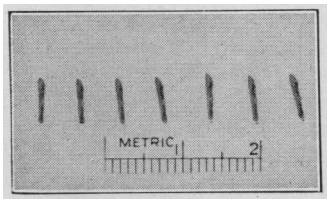

Fig. 5.—Size of stained and mounted tissue specimen of the thyroid obtained with Vim®-Silverman biopsy needle and diagnosed as subacute thyroiditis.

Undesirable after-effects were seen in only 2 patients. One of these received 2,000 r and a mild and transitory hypothyroidism developed, from which a prompt and complete recovery was made. The other was the patient previously mentioned, in whom a mild hypothyroidism developed after a total of 1,750 r had been received, plus 0.5 millicurie of radioactive iodine, a left lobectomy and a short course of propyl thiouracil. It would be difficult to attribute this patient's hypothyroidism exclusively to roentgen treatment.

Although it appears that irradiation in excess of 1,500 r may cause some impairment of thyroid function, there has been no evidence of hypothyroidism in any patient treated with the usual dosages of 600 to 800 r.

Radioactive iodine does not have therapeutic value in this disease. Nevertheless, 1 patient giving a six week history of a painful swelling in the neck, radiation of pain to the ears and severe fatigue became free of symptoms within six hours after receiving a tracer dose of 0.5 millicurie of radioactive iodine in spite of the fact that the thyroid picked up only a minimal amount of I^{131}. When seen three weeks later she was still asymptomatic and no thyroid enlargement was palpable. This result could not be duplicated in other cases.

Thyroidectomy was performed on 2 patients in whom the disease was not recognized clinically. Extirpation of the gland, although effective, seems hardly justified when less radical and equally effective roentgen therapy is available. We believe that treatment by roentgen ray is destined to replace surgical management of subacute thyroiditis.

REPORT OF CASE

Subacute (Pseudotuberculous or Giant Cell) Thyroiditis.—A woman aged 55 for five weeks had experienced pain in the lower right side of the neck radiating to the right ear. There was fatigue, palpitation and anorexia, and she had lost 6 pounds (2.7 Kg.).

Examination disclosed an enlargement of both lobes of the thyroid to twice normal size. These were hard and moderately tender. The temperature was 98.6 F. and the pulse rate 84. There were no symptoms of hyperthyroidism. The sedimentation rate was elevated to 1.85 (normal 0.45 or less). A tracer dose of radioactive iodine produced an uptake in the thyroid of only 10 per cent as compared with the normal average of 25 to 50 per cent.

A biopsy specimen was taken from the right lobe using the Vim®-Silverman needle, and the pathologist reported chronic thyroiditis with a decided granulomatous reaction to colloid.

Roentgen therapy consisting of a total of 750 r was given to the thyroid area in five treatments over a period of eight days. At the end of this time symptoms were strikingly relieved, and one week later the patient felt entirely well. The left lobe was no longer palpable, and the right lobe was smaller and less firm. Three weeks after treatment the thyroid was barely palpable and the patient remained free of symptoms.

SUMMARY

1. Subacute thyroiditis is a relatively common clinicopathologic entity distinct from struma lymphomatosa and Riedel's struma. Although it produces characteristic local and systemic symptoms, the diagnosis is often missed by those not familiar with the disease.

2. The disease may manifest itself in an acute form with fever, malaise and severe local pain and tenderness or may exist in a chronic form in which the local and systemic symptoms are minimal and the diagnosis is not clear.

3. The acute form may be confused with pharyngitis, otitis, dental infection, influenza or fever of unknown origin. The chronic form may simulate globus hystericus, adenoma of the thyroid, carcinoma of the thyroid, hyperthyroidism or chronic nervous exhaustion.

4. The diagnosis depends on the observation of a firm, usually symmetric enlargement of the thyroid which is frequently tender and is associated with a high sedimentation rate and low uptake of radioactive iodine. In doubtful cases satisfactory biopsy specimens of the thyroid can be obtained in the office by use of the Vim®-Silverman liver-biopsy needle.

5. The response of 38 patients treated by roentgen therapy in average doses of 600 to 800 r was dramatically prompt and complete. Thyroidectomy is not necessary.