two ounces of thick, green, foul-smelling pus. Exploration of this pocket led to an opening into the second part of the duodenum, which was enlarged by incision for some distance and a large hæmorrhagic-appearing tumour rolled out of the third part of the duodenum. It was attached at its superior pole to a long pedicle of gastric mucosa, with a diameter of about one inch. This was followed up into the stomach through the pylorus, which was greatly dilated, and ligated as high up as possible. The proximal duodenum was enormously widened. The second and third parts of the duodenum were carefully closed in and the abdomen drained. The gall bladder was also drained.

PATHOLOGICAL REPORT

The tumour was a large ovoid mass of tissue measuring 4½" in diameter and 5½" in length (Fig. 1). The surface was dark reddish-brown in colour and when palpated showed fluctuation. On section no fluid was found, but the mass was extremely soft and hæmorrhagic. The tissue was grayish in colour and showed numerous areas of hæmorrhage.

Histologic study of the growth (Fig. 2) showed interlacing bundles of fibres within which were many spindle-shaped nuclei. Where these bundles were seen in cross section, there was considerable vacuolization, suggesting the structure of nerve fibres. The nuclei varied somewhat; some were small, almost round and densely stained, while the majority were elongated and stained more lightly. The latter were arranged side by side (palisading), or in eddies and whorls. There was slight activity of the cells, but not sufficient to justify a diagnosis of malignancy. The tumour was situated between the gastric mucosa on one side and smooth muscle on the other. Phosphotungstic acid hæmatoxylin stained the fibres brownish-red (Fig. 2).

In view of the palisading of nuclei, the staining affinity of the fibres and the relative inactivity of the cells, this tumour was considered to be a perineural fibroma or neurofibroma.

The pathological diagnosis was made by Dr. W. O. Robinson, Pathologist, Toronto General Hospital. The diagnosis, considering the palisading of the cells, is at variance with the conclusions of Dr. Canney,[5] of Canterbury, who believes that palisading neurogenic tumours are probably neurilemmoma, but considering the confusion of descriptions, it is felt the diagnosis of neurofibroma should still stand.

The postoperative course was very stormy, due to infection of the abdominal wall. Unfortunately, despite massive antibiotic treatment, consolidation of both lungs developed four weeks later, and the patient died.

Although previous gall bladder and gastro-intestinal examinations had been reported negative, a stomach x-ray which had been taken three years previous to operation was reviewed, and this large mass was noted in the fundus of the stomach in one of the pictures. It had been considered a gas bubble.

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AMYLOID GOITRE

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According to the literature[1, 4, 5] this case, recently seen, would appear to be a rarity. Furthermore, it seems to present more signs suggestive of the diagnosis than those previously reported. By utilizing radioactive iodine* (R.A.I.) we were able to investigate the thyroid function in the presence of amyloid goitre more thoroughly than has been possible hitherto.

This patient was first seen at the request of her physician to consider whether ACTH or cortisone could or should be administered for relief of her invaliding rheumatoid arthritis of twenty years' standing. A goitre was observed and, on inquiry, she revealed that fullness in the neck had been present, to her knowledge, only for two or three months. This combination of long-standing rheumatoid arthritis and recent thyroid enlargement brought to mind a discussion of a similar combination of apparently unrelated diseases which Dr. A. Kranes,[1] in Boston in 1947, brilliantly fitted into the correct diagnosis. In his case, he suggested amyloid goitre, an entity completely unknown to us at that time. It was felt in our case that there was a reasonable chance for the same diagnosis and, as her history unfolded, it appeared certain that she had amyloidosis at least. Surgical biopsy proved that she had an amyloid goitre.

A single female, aged 37, was admitted to Hamilton General Hospital, October 20, 1950, for rheumatoid arthritis of 20 years' duration. Her arthritis had always been severe and disabling and for the last three years she had navigated only a little in a wheel chair. She complained only of her painful, deformed joints. A goitre was observed and she admitted noticing a swelling and tightness in her neck during the previous two months. She and her mother were sure there was no appreciable swelling in this region before that time, but it seemed to be enlarging steadily. There had been frequency of voiding, off and on for ten years, but this was worse and constant for the past six months, with associated polyuria. For a year she had noted easy bruising and for three months red spots appeared and disappeared in the skin. Periodic œdema was present during the past year in the legs, and for three months the face and arms were puffy in the mornings. She had become much weaker and lethargic lately.

Examination showed a cheerful, intelligent woman with dry brittle hair, flat, brittle nails, puffiness of face,

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The radioactive iodine (R.A.I.) (I^{131}) is obtained from Chalk River, Ontario, through Charles E. Frosst & Co., Montreal.

neck, shoulders and arms, and œdema of her atrophic legs up to the knees. All joints of the extremities were swollen and deformed; the spine was almost fixed in its entirety, and the knees were fixed in 30° of flexion. The thyroid was diffusely enlarged (8 to 10 times normal), smooth, firm, not tender, and with no lymph nodes palpable. There were petechial hæmorrhage with many ecchymoses scattered over the extremities and trunk. The lung fields were clear. The heart was clinically normal, pulse 68, and blood pressure 110/65. There was two-finger enlargement of liver and the tip of the spleen was readily palpable. Temperature rose occasionally to 100° F.

X-ray of chest was negative. Electrocardiograph showed low voltage. Basal metabolic rate could not be accurately obtained because of difficulty in weighing and measuring the patient who could not stand or sit erect. Hæmoglobin 35%; red blood cells 3,200,000; white blood cells 9,600. The differential white blood count was normal; eosinophile count 433 on November 1; sedimentation rate 49. A sternal bone marrow showed stimulated leukopoiesis with a white-red ratio of 75:11. serum albumin 5.6, and globulin 2.0; serum cholesterol 258. The urine repeatedly showed specific gravity of 1.010 to 1.006, 3 or 4 plus albumin, one plus red blood cells, and a few white blood cells. Blood urea nitrogen 18; uric acid 3.7; creatinine 1.45. A Congo red test showed 55% disappearance of dye from the blood. "An index of thyroid function"[2] was determined, utilizing 100 microcurie dose of radioactive iodine by mouth. In 24 hours the R.A.I. pick-up in the thyroid gland was 12% (or 1/3 normal), and the "conversion ratio"[2, 3] was 6% (in the hypothyroid range). On October 30, 1950, the thyroid was exposed by Dr. S. Hudecki. It was diffusely enlarged and pale red in colour. Bleeding throughout was difficult to control.

A biopsy of the isthmus was considered representative of the pathology present and the report read, "consists of a small reddish pea-sized gelatinous nodule of tissue. The sections show many acini of varying sizes. Some are enlarged and some are smaller than normal. They are filled with densely-stained colloid. The lining epithelium is low cuboidal in the smaller glands. There is an increase in stroma and an acellular homogeneously eosinophilic-staining material is seen. The walls of the vessels seem thickened with this material also. As this material suggested amyloid, an iodine stain and gentian violet stain were done. These proved to be positive for amyloid."

The hæmoglobin was brought up to 70%, with transfusions of whole blood. The patient was pathetically eager to try cortisone therapy, and with many misgivings this was begun; 100 mgm. intramuscularly per day from November 2 to 14. The eosinophile count fell to 233 and 167, on November 2 and 5, respectively. The œdema of ankles cleared; the red blood cells, but not the albumin, disappeared from urine; the frequency and polyuria ceased; the blood chemistry did not change; the surgical wound healed normally. The puffiness around the eyes disappeared, but the puffiness of face and shoulders and arms did not alter. The joints were more comfortable but little more movable. Desiccated thyroid extract (P.D. & Co.) gr. i, b.i.d., was given by mouth beginning November 8.

DISCUSSION

The most recent complete review of the literature on amyloid goitre was published by G. Walker, 1942.[4] Up to that time 56 cases had been reported, to which he added another two. Only a portion of all these, however, had a true "goitre", the others showing just amyloid deposits in the thyroid. Two cases[1, 5] have been reported more recently from Boston, and Dr. Mallory mentions having seen some four or five. For a detailed discussion of the interesting pathology in this type of goitre the reader is referred to the above mentioned articles.

It is considered of some interest that our case would appear to have definite evidence of hypothyroidism. Previous authors have suggested that in amyloid goitre the function of the thyroid gland was not disturbed. It does not seem likely that this should be so when amyloid in other organs generally impairs their activity. Perhaps tests with R.A.I. in future cases will answer this question.

The thyroid pick-up of R.A.I. was determined with a Geiger counter. We would have preferred to use the scintillating counter developed by H. Thode and located in McMaster University. It was not technically possible to move the patient or the instrument.

The "conversion ratio" or "estimation by rate of organic binding of I^{131}", was determined by the "modified technique" developed by Clark.[2, 3] By this test, twenty-four hours after ingestion of I^{131}, the total amount of R.A.I. in the plasma and the amount of R.A.I. in the plasma protein are determined. A ratio of these values is calculated and is referred to as the conversion ratio. Normal values range from 13 to 42%. Hyperthyroids give values above, and hypothyroids give values below this range. Dr. D. Clark introduced us to this test a few years ago, and gave us every aid in developing it for our use. In a series of just under 100 patients now under study, comprising hypo-, eu-, and hyperthyroids, we have been able to confirm his impression that it is superior to any other single test to determine thyroid function. Particularly is this true when, as in our case, the clinical picture is clouded by so many other disorders and where the basal metabolic rate cannot be accurately assessed.

SUMMARY

1. An amyloid goitre in a woman with amyloidosis secondary to or associated with chronic rheumatoid arthritis is presented.

2. For the first time such a thyroid has been shown to be hypofunctioning as evidenced by radioactive iodine studies.

3. Little significant change in her general state was observed after two weeks on cortisone therapy.

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