cases, the mortality has been low, though, as in other forms of intestinal obstruction, delay in treatment may lead to death, as in the case described by Davies (1956).

Intestinal obstruction by foodstuffs would seem to be common enough to warrant the strong recommendation that all patients who have undergone partial gastrectomy or gastro-jejunostomy should subsequently be given careful advice regarding their diet. Oranges constitute the most important hazard, so that only their juice should be taken. All bulky, fibrous, and coarse articles of diet should be thoroughly masticated or chopped up before ingestion. The provision of a small stoma could be used as an additional safeguard in individuals who are considered likely to ignore or forget such advice, but if patients are made aware of the particular danger to which their operation exposes them, most of them should have little difficulty in avoiding this complication.

Summary

Three cases are reported of intestinal obstruction by orange pith after partial gastrectomy. Recent case reports indicate that this complication has become relatively common. The importance of dietary advice to patients after gastrectomy is stressed.

My thanks are due to Mr. E. Stanley Lee for permission to publish the case reports and to Mr. W. H. W. Jayne, who performed the operation on the first patient.

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Medical Memoranda

Thyroid Carcinoma After Irradiation in Adult Life

Considerable interest has been aroused during the past decade regarding the carcinogenic effects of irradiation on the thyroid gland.

Wilson *et al.* (1958) reviewed the literature and reported the development of thyroid neoplasms in nine patients who several years previously had received ionizing irradiation. Seven of the cases were proved carcinomata and two were adenomata with a malignant predilection. In one of the malignant cases the irradiation was given during adult life.

Goolden (1958) related a similar development of thyroid carcinoma in three cases, two having received the x-ray therapy in adult life. He remarked on the paucity of reported cases of thyroid carcinoma after irradiation to the neck region in adult life and stressed the importance of reporting these cases.

Since 1935, 104 cases of carcinoma of the thyroid have been diagnosed in this department by the histological examination of surgical material. Sixty-three of these patients have been interrogated, either personally or indirectly with the co-operation of the

consultants and the general practitioners by questionnaire, for a history of exposure of the thyroid gland to irradiation. Attempts to trace the remaining 41 have so far been unrewarding. In 4 of the 63 cases interrogated an affirmative answer has been received, but in one, that of a woman aged 35, the irradiation was administered to the thyroid only five years before the diagnosis of a malignant adenoma was made. The interval was thought too short for irradiation to have had any significant carcinogenic effect, and the case is not reported.

The other three cases are reported here. Unfortunately there is no record of the dose of irradiation, but it was sufficient to alleviate the condition and was probably greater than 2,000 r, as pointed out by Wilson *et al.* (1958).

CASE REPORTS

Case 1.—A woman aged 79, who had had x-ray therapy in 1940 for thyrotoxicosis at the age of 63, was admitted to hospital in January, 1956, with a fixed, smooth, firm, and greatly enlarged right lobe of the thyroid gland. Partial removal of a tumour involving the whole of the right lobe and infiltrating into the trachea was carried out, followed by radiotherapy. The left lobe was smooth; it was regarded as normal, and was left *in situ*. Histological examination revealed an anaplastic carcinoma. The latent interval between the time of irradiation and diagnosis was 16 years. The patient died six months later.

Case 2.—A woman aged 59, who had had x-ray therapy in 1926 for thyrotoxicosis at the age of 29, was seen in April, 1956, and found to have a very firm and tender right lobe of the thyroid associated with hard palpable glands in the right posterior triangle of the neck and the right axilla. Subsequently, the removal of a malignant mass involving the isthmus and the right lobe of the thyroid, infiltrating along the right jugular vein and upper mediastinum, was carried out, followed by radiotherapy. Histological examination revealed an anaplastic carcinoma. The latent interval was 30 years. The patient died three months later.

Case 3.—A woman aged 46, who had had x-ray therapy in 1937 for thyrotoxicosis at the age of 26, was admitted to hospital in July, 1957, in congestive heart failure complicating thyrotoxicosis, which settled down with carbimazole and digoxin therapy. Partial thyroidectomy was carried out in February, 1958. Examination revealed a papillary adenocarcinoma in a diffusely enlarged thyroid gland. The latent interval was 21 years and at the time of writing the patient was still well with no signs of recurrence.

COMMENT

It is seen that less than 5% of the 63 patients in whom it has been possible to obtain information gave a history of previous irradiation with a latent period of sufficient length for the irradiation to have had any carcinogenic effect on the thyroid gland. They were all female patients, in whom there is a high incidence of spontaneously occurring carcinomata of the thyroid. In this series, 88 were females and 16 males. Again, the histological types were those which occurred most frequently in the age groups to which these patients belong, so that the finding may well be fortuitous. Nevertheless, the cases seem worth reporting.

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