

**A NEW TREND IN MANAGEMENT
OF CANCER THYROID**

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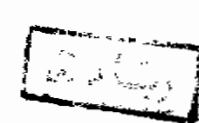
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INTRODUCTION

INTRODUCTION

The importance of cancer of the thyroid gland lies in the fact that it behaves in an unusual manner both as regards its wide histological variations and its clinical evaluation.

The number of new cases of thyroid cancer in the United States had been estimated as 35 to 40 per million population per year. Annual mortality from thyroid cancer is five deaths per one million men and eight deaths per one million women.

Cancer of the thyroid gland shows a variable rate of spread, e.g: the spread of the highly differentiated papillary carcinoma of the thyroid in the cervical lymph-nodes may be so slow as to last many years, on the other hand, the anaplastic tumors spread very rapidly both by lymphatics and blood stream.

This variation in behaviour raises special problem as regards the line or lines of treatment in any single case, so there is a great difference in opinion reflected in the literature concerning even the Fundamental rules of management.

In this essay, the incidence of cancer thyroid and its relation to different aetiological factors will be reviewed as well as its variation with age, sex and the different pathological types.

Special attention will be given to the new trends in diagnosis and treatment.

HISTORICAL REVIEW OF THE THYROID GLAND

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HISTORICAL REVIEW OF THYROID GLAND

The thyroid gland, previously referred to as the "laryngeal" gland, was so named by Wharton in 1646 because of either its own shieldlike (thyreos, shield) shape or the shape of the thyroid cartilage, with which it is closely associated.

Classic descriptions of hyperthyroidism or exophthalmic goiter, were presented by Parry (1825); Graves (1835), and Von Basedow (1840); and hypothyroidism or myxedema, was described by Curling (1850) and Gull (1875).

The first successful thyroidectomy on record appears to have been performed about A.D. 952 in Zahra, an Arab city of Spain, by Moorish Physician, Albucasis, who was well known throughout the Moslem world of this time, including Baghdad, one of the leading intellectual centers of the day. He was a remarkable man, both prolific and courageous. He recorded many of his medical ideas in his subsequently famous book, "Al-Tasrif", which was translated into Latin, French and Hebrew and is today regarded as one of the treasures of medical history emanating from the Arab World. Halsted's quotation of Mandt is responsible for bringing Albucasis successful thyroidectomy to modern attention, and it is of some interest that the translation of Al-Tasrif

available to Mandt's Sources records Albucasis as a "bold and, one may say, venturesome operator". (Dobyns, 1969). For hundreds of years no basic progress in thyroidectomy was made, and the surgical literature of the late nineteenth century is replete with descriptions of fatalities from thyroid surgery, generally resulting from massive and uncontrollable Hemorrhage. From Leipzig in 1848 comes the statement: "IF we review all we know concerning operations upon hard goitres we can only regard with tremendous aversion these foolhardy performance." Samuel D. Gross, the famed nineteenth century Philadelphia surgeon, wrote in 1966 "can the thyroid in the state of enlargement be removed?" Emphatically experience answers no, should a surgeon be so foolhardy to under take it ... every stroke of the knife will be followed by a torrent of blood and lucky it would be for him if his victim lived long enough for him to finish his horrid butchery. No honest and sensible surgeon would ever engage in it" (Dobyns, 1969).

In this technical and professional void, the dedicated genius of Theodor Kocher, professor of Surgery in Berne, was the primary force that moved thyroid surgery forward.

Iodine-deficiency goiter was a common disease in mountainous Switzerland, and more than 5000 patients were

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operated upon in Kocher's clinic of which approximately 4000 were his own.

Kocher advocated gentle, meticulous surgery, with sparing of the parathyroid glands and anatomic appreciation of the recurrent laryngeal nerve. With application of these principles, the surgical mortality decreased from more than 50 percent to approximately the current figure of 0.2 percent, representing a remarkable achievement. Even more important than these technical perfections was the discovery by Kocher that total thyroidectomy was followed by the development of myxedema, and he demonstrated that this distressing complication could be prevented by subtotal thyroidectomy. For his monumental contributions to the advancement of medical understanding and care in diseases of the thyroid gland, Kocher was awarded the Nobel Prize in 1909.

With the technique of thyroidectomy largely established, knowledge of the physiologic function of the thyroid provided the basis for further effective treatment of its disorders. In 1891, Murray, an English physician, administered a glycerin extract of sheep thyroid to myxedematous patient, with resulting improvement. In 1896, Boumann established the presence of a high iodine content in an acid hydrolysate of thyroid tissue, and Oswald's preparation of

iodothyroglobulin 8 years later suggested that the iodine was bound in large part to a releasable protein substance. Thyroxin itself was isolated by kendall in 1915 and its synthesis was accomplished by Harington and Barger in 1927. In 1953, the important discovery of 3,5,3 tri-iodo thyronine was made by Gross and Pitt-Rivers and by Roche, Lissitsky and Michel almost simultaneously. This compound proved to be more potent in a variety of its effects than thyroxin itself.

Of particular importance to safe thyroid surgery was the advent of effective antithyroid drugs. Thiouracil was introduced in 1943 by the Mackenzies and Astwood et al. While several other groups of investigators were contributing information in the same field. The discovery of additional and improved antithyroid drugs made possible preoperative, control of hyperthyroidism. With these drugs, safe surgical control of thyrotoxicosis became a reality, and this advance removed the remaining acute threat inherent in the surgery of the thyroid gland.

ETIOLOGY OF CANCER THYROID

AETIOLOGY

The aetiology of the thyroid cancer is unknown. The development of thyroid cancer in human beings may be pre-disposed to by the following conditions:

(a) Thyroid stimulating hormone (T.S.H.), (b) Genetic factors, (c) Radiation injury, (d) Carcinogens, (e) Iodine deficiency, (f) Auto immune thyroiditis, (g) Primary hyperthyroidism.

(a) Thyroid Stimulating Hormone (T.S.H.):

Excessive long-term stimulation of the gland by T.S.H. in the presence of either a hereditary factors or some agents producing injury to the gland, such as ionizing radiation, will produce a cancer in experimental animals, similar to the differentiated cancers seen in human (Money and Rowson ,1950).

In human beings, the development of thyroid nodules and cancer, either from radio active iodine exposure or external irradiation alone without excessive T.S.H. stimulation is well documented. (Conared et al. 1970). Favus et al. 1976; Hill 1976; Sheline et al. 1962; Socolow et al. 1963).

Recent studies have shown that benign and malignant differentiated thyroid tumors have receptors for thyrotropin

and that this hormone increases adenyl cyclase activity, the cyclic AMP concentration, and the oxidation of glucose by the tumors (Carayon, 1980). Growth of the tumor is probably dependent on these processes and is, therefore, influenced by thyrotropin. Anaplastic thyroid carcinoma lacks the receptors for thyrotropin (Carayon, 1980; Abe, 1981).

(b) Radiation:

Radiation to the thyroid gland may induce thyroid neoplasms, both benign and malignant. This is especially true when the radiation of the gland occurs in infancy and childhood (Hempelman, 1969).

In a study on large number of children with ring worm of the scalp had been treated with irradiation, it was shown that as little as 6.5 rads of external irradiation to the thyroid bed, leads to increase incidence of thyroid cancer many years later (Ron and Modan, 1980; Van Deal et al. 1983).

Calculated radiation dose to the thyroid have varied from about 200 to 1500 rads in most patients (Refetoff, 1975; Favus et al. 1976). Doses exceeding 2000 rads probably damage the thyroid to such an extent that neoplasms are rarely a consequence (Mc Dougall et al. 1980), although several cases of thyroid carcinoma have been reported, in