Thyroid Disease in a Peruvian Mummy

ENRIQUE GERSZTEN, M.D.

Associate Professor of Pathology, Medical College of Virginia, Health Sciences Division of Virginia Commonwealth University, Richmond, Virginia

MARVIN J. ALLISON, PH.D.

Professor of Clinical Pathology, Medical College of Virginia, Health Sciences Division of Virginia Commonwealth University, Richmond, Virginia

ALEJANDRO PEZZIA, PH.D.

Curator, Regional Museum of Ica, Ica, Peru

DAVID KLURFELD, M.S.

Department of Pathology, Medical College of Virginia, Health Sciences Division of Virginia Commonwealth University, Richmond, Virginia

Although the pathogenesis of endocrine disorders has only recently been recognized, disorders of the thyroid gland have been recorded since ancient times, primarily because of the gland's strategic location in the neck. Goiter, enlargement of the gland, was described early in history and endocrine goiter was also mentioned. The earliest written references go back as far as the Chinese of the second millennium BC, Greek and Roman authors of classical times, and medieval manuscripts. In his history of goiter, Greenwald contended that there was no evidence of goiter in the Americas before the coming of the white man, although the protruding eyes of possible exophthalmic goiter are seen in Peruvian ceramic sculpture from 2000 years ago.

The present report deals with a case of goiter diagnosed in a Peruvian mummy on the basis of autopsy findings. The mummy bundle was excavated from the Hacienda Ocucaje, valley of Ica, in southern Peru. The mummy was a female, estimated to have been 30 years old at the time of death, belonging to the Nazca culture. Carbon-14 dating placed the time of her death around 94 BC.

X-ray examination prior to the autopsy showed areas of pathological calcification measuring up to 1 cm in the thyroid area (Fig 1); there was also calcification of the abdominal aorta. The skull film revealed the calvarium to be twice the normal thickness and moderate degrees of osteoarthritis in the lumbar area (second, third, and fourth lumbar) were also observed. The x-ray findings of the long bones showed two Harris lines on the distal femur and tibia occurring approximately at four and eleven years of age and an area of healed osteomyelitis in the left femur. Examination of the body showed a severe degree of oral disease with many missing teeth and advanced osteoclasia of the alveolar ridge. The abdominal aorta had several fibrous and calcified plaques. Blood group typing showed the mummy to belong to group AB.

In the areas of the neck where calcification had been noted, careful dissection revealed the thyroid
Fig 1—X-ray of neck area reveals calcified nodules in the thyroid area (arrow).

gland containing two large calcified areas (1 cm x 0.5 cm) and several smaller foci. All these calcifications were surrounded by thick tissues. Selected sections were taken for microscopic examination. The histologic sections were stained with NAFT stain, a commercial stain used for biopsies, and showed occasional scattered follicles, most of which were filled with a thick colloid material (Fig 2). The calcium material was stained pale red with the Alizarin red stain.

Hypothyroidism may be produced by a primary failure of the thyroid parenchyma or secondary to absence of thyrotropic hormone secretion by the pituitary. In both instances, the disease manifestations are due to a lack of thyroid hormone. Female patients account for 80% of all cases of spontaneous hypothyroidism which occurs mainly between the ages of 30 and 60 years. The mummy described here falls into this high-risk group. The severe degree of aortic atherosclerosis and some of the bony changes are also consistent with the diagnosis of hypothyroidism. The area where the mummy was found is a short distance from the sea and there is no lack of iodine, but occasional cases are seen in modern coastal inhabitants. Those that were seen in pre-Colombian times are substantiated by ceramics representing goiter or myxedema.

In this case, the woman had an enlarged thyroid (goiter); in autopsies of other mummies the thyroid gland cannot be identified. The areas of calcification were definitely inside the capsule of the gland. The sex and age group, the presence of severe atherosclerosis, and thickened calvarium are all common findings in hypothyroidism. An inflammatory process or autoimmune disease of the gland cannot be ruled out, but the probability of these diagnoses is least likely.

REFERENCES


