The Electrocardiogram in Hypothyroidism and Hypocalcemia after Total Thyroidectomy

MICHAEL BERNREITER, M.D., F.C.C.P.*
Kansas City, Missouri

THIS 49-YEAR-OLD FEMALE HAD A radical thyroidectomy in 1956. She first came under observation in our clinic on July 16, 1961. At that time, she presented typical clinical and laboratory findings of myxedema. She also complained of marked stiffness of the muscles in her hands, feet and face. At times she had pharyngeal spasms with whistling and wheezy breathing. The Chvostek and Trousseau signs were easily elicited. Serum
calcium: 2.5 mEq. An electrocardiogram taken after admission (Fig. 1) showed bradycardia, low QRS voltage with isoelectric or inverted T waves in all leads. These findings were best explained on the basis of hypothyroidism. Another interesting finding in this tracing is the markedly prolonged QT interval (.58 sec.), (upper limit of normal for this rate is .42 sec.) with particular prolongation of the ST segment, a characteristic finding of hypocalcemia (post-operative parathyroid deficiency).

The patient was treated with thyroid extract, calcium and vitamin D, and an electrocardiogram taken three months later (Fig. 2) showed significant changes and return to normal. There was also much improvement in the patient's clinical condition.

It is interesting to find the typical pattern of hypothyroidism and hypocalcemia (Fig. 1) in a patient who developed myxedema and parathyroid tetany after radical thyroidectomy. The inverted T waves in Fig. 1 do not commonly occur in hypocalcemia but have been described. In this patient the inverted T waves may have been due to hypocalcemia or hypocalcemia plus hypothyroidism.