

It will be seen that the rise in metabolism and in ventilation after epinephrin injection in the obese subjects showed no significant difference from that in the normal controls. There was a lower basal respiratory quotient in the obese, and a smaller rise after epinephrin in the obese subjects than in the normal controls. Pulse pressure also showed a slight decrease in rise in the obese when compared to the normal.

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The effect of thyroid on calcium metabolism.

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Patients with exophthalmic goiter and normal controls were given a carefully weighed diet deficient in calcium (0.1 gm. per day) but adequate in total calories. On this regime a negative calcium balance was established in all subjects. Determinations were made of total calcium, nitrogen and phosphorus in urine and feces. Frequent basal metabolic rates and determinations of calcium and phosphorus of blood were also made.

Three typical, rather severe cases of exophthalmic goiter showed a very high calcium excretion—one of them five times the average found in a series of controls. Phosphorus excretion was also increased though not as markedly as calcium. This high excretion was maintained with a high basal metabolic rate, but as the basal metabolic rate fell (following the ingestion of Lugol's solution and operation), the calcium excretion also fell markedly and approached normal.

One myxedema patient showed a calcium excretion below normal. Two of the normal controls also took thyroid and thyroxin in amounts sufficient to raise metabolism twenty per cent. On this diet, inadequate in calcium, the calcium excretion rose definitely with the metabolic rate.

In all of these subjects the blood calcium and phosphorus was normal.

The significance of these findings and their possible relation to parathyroid activity is being further investigated on cases of myxedema, adenoma of the thyroid, parathyroid tetany, and on animals.

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The mechanism of the postural contraction (tonus) of skeletal muscle.

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Those who find inadequate the belief that the sympathetic nervous system controls the tonus of skeletal muscle have been confronted by the difficulty of offering an alternative view satisfactory to themselves and to their opponents. It is the purpose of this communication to suggest a mechanism of tonic contraction compatible with the all-or-none principle of muscular activity. The present conception takes due account of the long-sustained character of postural reactions; it recognizes the lengthening and shortening reactions, and it conforms with the well-recognized cooperative interaction between voluntary and tonic responses. Finally, it takes into account the probable function subserved by the sympathetic nerve supply of skeletal muscle

To examine tonic reactions of skeletal muscle, it is essential to simplify experimental conditions to the greatest possible extent. Consequently, if we utilize the muscles of a decerebrate preparation, which are admittedly tonic, we must exclude all possible extraneous reflex influence. Magnus¹ has found that decerebrate rigidity continues to exist in preparation, the brain-stem of which has been sectioned just above the vestibular nuclei and in

¹ Magnus, R., "Körperstellung," Berlin, Springer, 1924.