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Epinephrin reaction in obesity.

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The reaction to epinephrin in the obese has been studied from a metabolic standpoint in a series of cases and compared with a group of normal controls. The subjects were studied in the basal condition, that is twelve to fifteen hours after the last meal, with a period of preliminary rest of one half hour before readings were begun. A solution of adrenalin (P. D. & Co.) in the tablet form, containing 0.625 mg. of adrenalin, were injected intramuscularly in each subject and the metabolism, respiratory quotient, ventilation, pulse rate and blood pressure noted 10, 20, 30, 60, 90, 120, and 150 minutes after epinephrin injection. The tablet form of epinephrin was used so as to insure greater constancy in epinephrin content, the solution having a tendency to deteriorate on standing.

Expressed on a basis of percentage rise above basal, it was found that the metabolism rose 26 to 28 per cent above basal in 20 to 30 minutes after epinephrin injection, in both the obese and normal subjects, which compares favorably with Boothby and Sandiford's work.[1] The ventilation per hour rose to 38 per cent in the obese and to 42 per cent in the normal controls. The respiratory quotients however showed the greatest variation, rising to 11 per cent above basal in 10 minutes in the obese, while a level of 19.6 per cent was reached in the normal subjects in the same length of time. The average basal respiratory quotient in the obese was .754, while in the normal it averaged .810. The pulse rate rose to 40 per cent in the obese, but only to 26 per cent in the normal in 30 minutes after injection. Here the discrepancy is probably due to the lower basal level in the obese, being 65 beats per minute in these cases, while 70 was the average basal level in the normal controls. Pulse pressure reached a height of 57 per cent above basal in 30 minutes in the obese subjects and 67 per cent in the normals in the same length of time.

[1] Boothby, W. M., and Sandiford, Irene, *Am. J. Phys.*, 1920, li, 200.

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.