73 (890)

Parathyroid hypertrophy and hyperplasia in fowls.

By DAVID MARINE (*by invitation*).

[*From the H. K. Cushing Laboratory of Experimental Medicine, Western Reserve University, Cleveland, Ohio.*]

Physiological overgrowth of the parathyroid glands in mammals has been very rarely observed. Erdheim,[1] Bauer[2] and Strada[3] have recently described its occurrence in man in association with some cases of osteomalacia. Three instances of undoubted general parathyroid enlargement in bitches in association with lactation have come under my observation.

In the reports of partial removal and of transplantation of mammalian parathyroids, particularly in dogs, one of the most characteristic features has been the absence of any noteworthy compensatory enlargement of the remaining portion within the time limits in which other tissues, like the thyroid, heart muscle, kidney, etc., react to artificially induced insufficiencies.

In the course of some experiments with the thyroid gland in fowls in 1910, I observed several instances of marked enlargement of the parathyroids independent of the changes occurring in the thyroid glands. These parathyroid changes were found in fowls which had been fed with maize and wheat for periods of 2 to 6 months. The observations were repeated in 1911, 1912, and 1913, with similar results.

Since calcium temporarily relieves the symptoms of parathyroid tetany in mammals, and since maize and wheat contain very little calcium, it was thought possibly the parathyroid overgrowth might be a result of a calcium deficiency, and if this was so, calcium might exert some protective action against parathyroid overgrowth.

Calcium hydroxide, calcium lactate, calcium carbonate (as chalk and crushed oyster shells), magnesium carbonate, strontium

[1] Erdheim, J., "Ueber Epithelkörperbefunde bei Osteomalacie," *Sitz. Ber. Akad. Wiss.*, 1907, Bd. CXVI, 311–370.

[2] Bauer, T., "Morphologische Studien über die Beziehungen der Epithelkörperchen zum Kalkstoffwechsel," *Frankfurt. Zeitschr. f. Path.*, 1911, VII, 23.

[3] Strada, F., "Le paratiroide nell' osteomalacia e nell' osteoporosi senile," *Pathologica Anno*, I, 1909, 423–437.

carbonate, sodium citrate, sulphuric acid, neutral sulphur and sodium hydroxide have been given in the diet of maize and wheat for periods of one, two and three months. One hundred and ten fowls have been used. No detectable inhibition of the parathyroid overgrowth could be detected in the fowls given magnesium carbonate, strontium carbonate, sulphuric acid, neutral sulphur, sodium citrate or sodium hydroxide,—the growth being as marked as in the controls. On the other hand, those given sulphuric acid and neutral sulphur had more marked parathyroid enlargements and softening of the bones than those given the other chemical substances or the controls. In those fowls which had received calcium there was uniformly less parathyroid overgrowth; in those given calcium hydroxide and calcium carbonate it was barely detectable; while in those given calcium lactate there was moderate enlargement. No differences ascribable to sex could be determined.

These observations suggest: (*a*) that the parathyroids of birds are more susceptible to overgrowth than those of mammals; (*b*) that calcium offers some protection against overgrowth; and (*c*) that the parathyroids (as MacCallum has suggested) are intimately associated with the function of calcium in the complex of body metabolism and nutrition.

74 (891)

Liver necroses associated with Streptococcus infection.

By OSKAR KLOTZ and MAY E. BOTHWELL.

[*From the Pathological Laboratories, University of Pittsburgh, Pittsburgh, Pa.*]

In a series of experiments upon rabbits to determine the tissue reactions to the infection by the *Streptococcus viridans* and having special reference to the heart, arteries, and kidneys, several sporadic examples of necrosis of the liver were encountered. Living cultures of *Streptococcus fecalis*, *Streptococcus mitis*, and *Streptococcus salivarius* were used. Repeated inoculations, from three to five, had been made at intervals of four days.

The earliest necroses appeared in eleven days and consisted