5250

The Healing of Late Rickets Coincident with Low Serum Phosphate.

GENEVIEVE STEARNS AND JULIAN D. BOYD.

From the Department of Pediatrics, College of Medicine, State University of Iowa.

The calcium and phosphorus metabolism of two white girls, 12 and 13 years old, with clinical, roentgenological and chemical evidence of rickets was studied over a period of several months. During this time there was definite roentgenological evidence of healing of the ricketic lesions; the amounts of calcium and phosphorus retained by each child were ample for bone formation; yet the serum inorganic phosphorus of each child remained consistently low, ranging from 2 to 3.2 mg. %. The healing was not due to seasonal influence for it occurred during the late winter months.

5251

Lipids Associated with Proteins Under Normal and Pathological Conditions.

MARY E. TURNER. (Introduced by R. B. Gibson.)

From the Department of Biochemistry, University of Iowa.

The literature contains scattered references to the attraction of proteins for lipids. However, there are no statements in regard to any variations between normal and pathological conditions. Also no definite conclusions have been drawn as to the character of the attraction, that is, whether it is a physical or chemical union.

The problem was undertaken for a twofold purpose. It was hoped that an insight into the relationships between the various lipids and proteins might offer a method for differential diagnosis should there be characteristic variations in the amount of lipid associated with the albumin and globulin fractions. It was also thought that a more comprehensive study might throw some light on the type of association.

Blood plasma and edema fluids from cases having a possible lipemia were investigated; among these were cases of diabetes, nephritis, cirrhosis of the liver, carcinoma, and cardiac failure. Normal blood was taken for comparison. Fatty acids, lecithin,

cholesterol (free and ester) and iodine numbers were determined in the extracted albumin and globulin fractions as well as in the whole fluid.

The proteins were removed in their respective fractions by means of ammonium sulfate, heat coagulated at the isoelectric point, and washed free from the salt. The fatty acids were determined by Bloor's oxidative method, the lecithin by oxidation and formation of the blue ammonium phosphomolybdate, the cholesterol by a modification of the Okey oxidative method, and the iodine numbers by Gibson's micro method.

Comparisons were made between the total lipid content and the lipid associated with the proteins, also the distribution of the latter between albumin and globulin was determined. Since the protein ratios are not consistent and the amounts of globulin and albumin are not equal, calculations on the basis of mg. percent do not give the true relation between the lipids and the respective protein lipid fractions. However, on the basis of mg. per gram of protein the figures can be compared.

The variations between cases were not sufficient to offer a suitable means for clinical diagnosis. Increased lipid content of the plasma or fluid was reflected in respective increases in the protein fractions. The plasma globulins had the greatest attraction for fatty acids and lecithins while the cholesterol was fairly evenly distributed. Whether this is a physical or chemical union cannot be stated as yet. In the edema fluids, the relative amounts of lecithin and cholesterol associated with the globulin fraction were much greater than in the case of the plasma.

5252

Reproduction and Lactation on Simplified Diets.

P. D. WILKINSON AND V. E. NELSON.

From the Laboratory of Physiological Chemistry, Iowa State College, Ames.

Guest, Nelson, Parks, and Fulmer[1] showed that on certain synthetic diets containing various grains as the sole source of vitamins B and G growth and reproduction in the rat were normal but mammary function was decidedly abnormal. Daniels and Hutton[2]

[1] Guest, A. E., Nelson, V. E., Parks, T. B., and Fulmer, E. I., *Am. J. Physiol.*, 1926, **76**, 325.

[2] Daniels, A. L., and Hutton, M. K., *J. Biol. Chem.*, 1925, **63**, 143.