THE BIOCHEMICAL INVESTIGATIONS IN PEDIATRICS*

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INTRODUCTION

The biochemical investigations in pediatric practice for the last twenty years have increased enormous knowledge of the chemical abnormalities to be found in diseases. This increase has occurred along with the growth of biochemistry and has been greatly aided by the development of analytical methods suitable for estimating on a microscale many of the substances present in the body fluid and excreta.

In earlier years the value of biochemical investigations were not properly appreciated, but of course, now-a-days the clinicians understand the usefulness of the chemical tests, but one should remember that it is not, has never been, and almost certainly never will be "philosopher's stone of medicine", its methods both as regards number and accuracy are still far from perfect; it is still growing so rapidly that many of its conclusions may require modification; even with accurate methods of analysis the normal biological range of variation and the reserve power possessed by all healthy tissues limit, and must continue to limit the usefulness of chemical tests. Nevertheless, properly used and interpreted with due regard to these limitations, the biochemical investigations have established their right to be considered among the major aids in diagnostic medicine. Like other laboratory methods, they must be used simply to supply evidence which

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the clinician has then to consider along with his clinical findings and all other available information, in other words they supplement but do not replace clinical examination.

**COLLECTION OF BLOOD**

*Capillary blood.*—Usually obtained in pediatric practice by stabbing the heel or by pricking the finger or lobe of an ear. In cases of infants the best way to secure capillary blood is to grasp the ankle firmly so as to make the foot congested, then to stab the heel with a stout surgical needle. Blood is “milked out” by massaging from the toes down the heel, gripping the whole foot in the hand.

*Venous blood.*—In infants whose fontenelle is patent, sinus puncture is much the simplest and most satisfactory method in almost all cases. The infant is placed on its back across the bed or on a table, and the head is securely held by an assistant who places his hands firmly one over each ear. The head must be held rigid, no movement being allowed. The skin over the anterior fontanelle is painted well with iodine. The needle is inserted in the posterior angle of the fontanelle in the mid line. The needle should never bury deeper than the length of its bevel.

In young children a superficial vein in the neck is sometimes selected. The child is best placed on its side on a rigid table. The child’s head hangs over the table’s edge. A small pillow is placed on the edge to make it more soft. In older children the venous blood can be obtained from a superficial vein of the arm.

*Microtechnique.*—Micro analysis is particularly helpful in pediatrics because with minimum amount of 0.2 ml i.e. 1/5 c.c. or even in some tests 0.05 ml. i.e., 1/20 c.c. of blood is required to perform the following analysis, e.g., urea, N.P.N. uric acid, creatinin, inorganic phosphate, cholesterol, glucose, sulphonamide etc. Moreover, the microanalysis has further advantage of economising the reagents. The latest micro-technique of King have much simplified the various biochemical investigations. I have seen in the various institutions of U.K. the routine biochemical investigations of the hospital materials being carried out on microtechnical methods. The accuracy of microtechnique is usually beyond question, and the bio-