A NEW METHOD OF DIAGNOSIS OF PERITONITIS IN INFANCY AND CHILDHOOD

PRELIMINARY REPORT *

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It is generally recognized that the diagnosis of peritonitis in childhood and particularly in infancy presents a difficult problem. Peritonitis is frequently found at necropsy, when it had not been suspected during life, and, on the other hand, it is often impossible to exclude peritonitis as the cause of obscure febrile conditions in infancy.

Our purpose was to obtain a specimen of peritoneal fluid in order to determine the initial reaction to the inflammatory process. Aspiration has several disadvantages. First, a comparatively large amount of fluid must be drawn through the metal needle and into the barrel of the syringe before one can observe whether fluid has been obtained. Second, aspiration is apt to suck omentum or intestine to the needle point, damage the intestine, or, at least, block the needle and thus prevent the aspiration of fluid even though it may be present. Furthermore, we believe that aspiration has been attempted, and that it has been discarded or at least has not proved of sufficient value to warrant further trial.

The classical Pfeiffer experiment, in which a capillary tube is inserted into the peritoneal cavity of a guinea-pig and fluid obtained by capillary attraction, suggested the procedure we finally adopted. Glass needles have been used. They were prepared from glass tubing $\frac{3}{16}$ inch thick with a bore of about $\frac{1}{32}$ inch, and were drawn to a point and beveled. In order to add siphonage to the force of capillary attraction and obtain a larger amount of fluid, a bulb was blown and the tubing bent.

METHOD OF PROCEDURE

The procedure is as follows: the skin of the abdomen is swabbed with iodine and the usual precautions are taken to determine bladder distention. A steel needle, about number 17 gage, is used to puncture the skin in the midline about one-half inch below the umbilicus. The glass needle is inserted through this opening and then, held almost perpendicular to the surface of the skin, it is firmly pushed inward until the sudden release of pressure indicates that the needle has

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entered the peritoneal cavity. By making the pressure parallel to the long axis of the needle the likelihood of breaking the needle is decreased.

In a small series of normal children, or, rather, children not suffering from peritoneal exudation, fluid was obtained in only one case. The amount was sufficient only for a few smear preparations. In two cases of ascites, before a clinical diagnosis of excessive fluid could be established, puncture demonstrated the presence of fluid. In one case 0.5 c.c. was obtained. In the only case of peritonitis in which we have had the opportunity of trying this procedure, purulent fluid was obtained. The amount was ample for culture; smears showed great numbers of gram-positive cocci in chains. This experience,

The upper figure shows the straight capillary needle. The lower figure is that of the needle used when siphonage is desired.

brief as it is, establishes abdominal puncture with a capillary tube as a possible method for the diagnosis of intra-abdominal exudates.

Glass needles have distinct advantages. The capillary attraction of glass is far greater than that of metals, and the smallest amount of fluid rising in the tube can readily be seen. The one disadvantage is fragility. We are at present experimenting with needles and trocars of metal and glass in the hope of combining the advantages of both materials. These and further studies on peritoneal fluid will be the subject of a later communication.