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A Rapid Method for Typing in Pneumococcal Meningitis.

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The typing of pneumococci is a laboratory procedure which requires a considerable amount of time and for this reason its practical value is greatly minimized. Whether cultures of the organism or white mice inoculations are resorted to, time is a factor that cannot be avoided.

The choice between an agglutination reaction or a precipitation reaction to determine the specific type is rather a personal one, but the writer feels that the latter is in many ways more satisfactory and conclusive.

In pneumococcal meningitis the spinal fluid offers us the means of producing an antigen for a precipitation reaction which is most satisfactory, and permits typing of the pneumococcus present in a very short space of time.

In pneumococci infections of the meninges there are many pneumococci present in the spinal fluid. Whatever amount of fluid is available is centrifuged to throw the organisms to the bottom of the test tube. The fluid is then pipetted from the top, allowing two or three cubic centimeters to remain at the bottom. This is now shaken and we have a concentration of pneumococci much as we would have in a culture many hours old. As the pneumococcus is a bile-soluble organism, we add sodium taurocholate in the proportion of 0.2 of a cubic centimeter of a 10 per cent solution to each cubic centimeter of the spinal fluid retained. It should now be thoroughly mixed by shaking and allowed to stand for from 15 to 30 minutes to allow for the dissolution of the pneumococci. Centrifugation at high speed is again resorted to in order to clear the solution. It is then carefully pipetted off, not disturbing the sediment at the bottom of the tube. This gives us a satisfactory antigen prepared and ready for use, and not requiring an undue amount of time.

While this preparation is going on, 4 small calibre test tubes, 5 mm. x 60 mm. (ordinary capillary tubing cut in 60 mm. lengths and sealed on one end by Bunsen flame is all that is necessary) are set up in a rack, and undiluted diagnostic anti-sera for types I, II and III pneumococcus are placed in tubes 1, 2 and 3 respectively, (this sera may be obtained from the biological supply houses) and in tube 4 saline is used as a control. The amounts of sera need not

be accurately measured, about 1 cm. depth in the tubes is sufficient, the amounts being approximately the same in each tube. Now an equal amount of our prepared antigen is added to each tube and mixed with the serum. A definite precipitate forms in the tube containing the specific anti-serum for the particular type of pneumococcus present. The forming of this precipitate is only the matter of a few minutes.

Setting up the reaction in tubes is not absolutely essential; a slide test may be substituted. Place 3 drops of the anti-serum for pneumococcus, type I, on a clean glass slide and add 3 drops of the prepared antigen. Mix these thoroughly and then rotate gently on the slide. Repeat this procedure using type II anti-serum, and again using type III anti-serum. A definite precipitate will be seen on the slide when the anti-serum corresponds to the particular type of pneumococcus present.

In conclusion. 1. The pneumococcus in meningitis may be typed in a satisfactory and rapid manner.

2. In many instances a positive differentiation may be quickly made between a pneumococcus and a streptococcus, avoiding the delay of tedious and time-consuming cultural studies.