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The applicability of the precipitin reaction in determining the infectivity of discharges from gonorrheal infections.

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The demonstration of gonococci by either culture or smear method is difficult after the subsidence of acute gonorrheal symptoms. Complement fixation tests on the blood of treated or untreated cases may give negative results. There is need therefore of a method to determine the persistence of infectiousness.

Robinson and Meader¹ reported encouraging results with the application of the precipitin reaction to discharges of gonorrheal origin. We have attempted to verify their results, working under a grant from the U. S. Interdepartmental Social Hygiene Board.

Selected rabbits were immunized with live gonococci to produce the immune serum used for the tests. Specific gonococcus antigen was prepared by autolyzing the gonococcus in salt solution for several days and centrifugalizing to obtain a clear antigen.

"Discharge extracts" from cases were prepared by adding to 2 c.c. of salt solution the secretions obtained from the cervix or vagina. The mixture was allowed to stand over night and then centrifugalized until clear. 0.2 c.c. of clarified extract was then added to 0.2 c.c. of diluted immune serum and to 0.2 c.c. of diluted normal serum as a control. A positive result was shown by the development of a ring of varying thickness and opacity at the point of contact of extract and serum or by the development of a precipitate. The reaction appeared usually from two hours to eighteen hours.

With 92 specimens, smears positive, 82 per cent. gave reactions with gonococcus serum while 21 per cent. gave reactions with normal serum. With 49 specimens, smears negative, 61 per cent. gave reactions with gonococcus serum, while 51 per cent. gave reactions with normal serum. The relatively frequent reactions

¹ G. H. Robinson and P. D. Meader, *The Journal of Urology*, 1920, iv, 551.

with normal serum indicated the presence of a non-specific factor and raised the question as to whether the reactions occurring with immune serum alone could be considered specific.

Of 17 non-gonorrhoeal vaginal specimens from children 100 per cent. reacted with immune serum and 94 per cent. with normal serum. Nose and throat specimens and a miscellaneous group of sputums, pus due to infection by bacteria other than gonococci and peritoneal washings from normal mice or mice inoculated with exudates due to pneumococcus or streptococcus, gave similar non-specific reactions.

Various methods have been employed in the attempt to eliminate or lessen the non-specific reactions, so that a specific reaction could be recognized if it occurred. The standardization of the opacity of "discharge extracts," the dilution of the serums or of the extracts, or of both, and finally the heating of the extracts have failed to be of help.

With gonococcus serums, precipitates were most frequently encountered with antigens prepared from the staphylococcus and meningococcus. Absorption of gonococcus serums by these heterologous types did not reduce appreciably the reactions obtained with extracts from non-gonorrhoeal sources.

That the reactions obtained with gonococcus case extracts could not be considered as specific was most conclusively shown by the persistence of reactions after the gonococcus serum was absorbed by the gonococcus. That is, when gonococci were added to the serum to the point where it no longer reacted with a known gonococcus antigen, it still gave a precipitate with extracts from gonococcus cases. Although a specific reaction might have occurred at times, the presence of this non-specific factor would have obscured it.

The precipitin reaction, therefore, as recommended by Robinson and Meader is not applicable for the determination of the presence of the gonococcus in discharges from the cervix, urethra, etc.