

## A STUDY OF THE WASSERMANN REACTION IN CONNECTION WITH HEREDITARY SYPHILIS

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The high rate of infant mortality in the children of syphilitic parents is an element of great concern in the social problem, but even greater is the disaster caused by these children living to maturity with their condition unrecognized. How may these conditions be met? By adopting whatever means we can to determine the presence of syphilis, that it may receive prompt attention before the ravages of the disease are so great that the individual becomes a menace to society.

As an aid in determining the presence of syphilis in those cases presenting suspicious symptoms, it will be found that the serum diagnosis is of vast assistance. In the analysis of the symptoms in the cases of hereditary syphilis (to be referred to later) I found that by resorting to the Wassermann reaction a great many cases gave a positive reaction while not presenting a typical clinical picture of syphilis. These cases, however, had sufficiently suspicious symptoms to warrant corroboration, and in a great many of these cases positive reactions were obtained not only in the child, but also in the mother.

As there is much difference of opinion as to the reliability of the Wassermann reaction, I determined to satisfy myself with its study in connection with hereditary cases of syphilis.

The basis of this paper is the study of 244 Wassermann reactions in 235 cases, 9 of which were for either corroboration in diagnosis or control in treatment. The tests employed were the Tschernogubow and Noguchi modifications; of the former, 181 tests were made in 177 cases, and of the latter 63 tests in 58 cases. The 181 Tschernogubow tests were as follows: 123 positives in 120 cases, 70 in 70 parents and 53 in 50 children; and 58 negatives in 57 cases, 23 in 23 parents and 35 in 34 children. The 63 Noguchi tests were as follows: 33 positives in 28 cases and 30 negatives in 30 cases.

The Tschernogubow tests were made in all the parents, and in all the children of 3 years and above, while the Noguchi tests were made in all the children under 3 years of age.

In the 244 reactions, 156 were positive in 148 cases and 88 were negative in 87 cases. Of the 148 positive cases, 78 were children and 70 were parents, 61 mothers and 9 fathers. In only one of these cases,

a child, should the reaction have been different. This was one of twins. The other twin and mother each gave a negative reaction. As the patient was not brought back for a control reaction, it cannot be stated definitely whether the error was due to the baby or to the test.

In the 88 negative reports in 87 cases, 64 were children and 23 parents, 21 mothers and 2 fathers. A negative reaction was obtained in a baby 18 months old with a condyloma, from the scrapings of which treponema were found. In this instance also the baby did not return for a second Wassermann. This negative Wassermann cannot be explained except as an error. Aside from this case there were 8 instances in which there were irregular reactions, either a negative in the child and a positive in the mother, or the reverse. These cases have been classified as irregular and will be considered later.

Eighty-two specimens of blood from eighty-two mothers were examined, resulting in 61 positives and 21 negative. Eleven specimens of blood from 11 fathers were examined with the result that 9 were positive and 2 negative. In no instance in which the father's and mother's blood was examined was there any difference in their reactions. Eleven examinations were made; in 9 both were positive and in 2 both were negative. Seventeen children of these 11 fathers and mothers were examined with the result that 13 were positive, as were the parents, 2 were negative, as were the parents, and 2 were irregular. In the two instances classed as irregular the blood of the child did not give the same result as that of the mother and father, but in both instances the father and mother gave the same reaction. These two cases occurred in the same family.

Of 67 reactions made in mother and child (67 children of 53 mothers), 44 were positive in both mother and child, 14 were negative in both mother and child, and in 9 cases the results could be classed as irregular. The 9 include the 2 irregular results referred to in connection with the father and mother and child, and 7 the remaining irregular cases of this paper.

The blood of 29 mothers was examined without examining the child's blood: in 23 instances the result was positive, and in the remaining 6 it was negative. These results agreed with the clinical diagnoses of the children.

Of 142 children whose blood was examined, 78 were positive and 64 negative.

In 75 children, whose mothers' blood was not examined, the reactions were positive in 30 instances and negative in 45.

#### IRREGULAR REACTIONS

In 2 instances the father and mother gave a positive and the child a negative reaction; in 4 instances the mother gave a positive and the

child a negative reaction; and in 3 instances the mother gave a negative and the child a positive reaction.

*Class A.—Father and Mother Positive; Child Negative*

Cases 1 and 2 occurred in the same family. The negative reactions were not corroborated by further blood examinations and were made on the same day, so that the fault may have been with the Wassermann. The third child in this family gave a positive and was the one for whom I was first consulted. The history given by the mother was extremely suggestive of lues during her pregnancy with the two children in whom the negative reactions were obtained. Though the reaction may have been in error, it is possible that these two children may have been specific at birth, and were in an inactive state when their blood was examined. On the other hand, it must be remembered that a healthy child may be born of a specific mother. However, this is hardly the explanation in these cases, as the mother had active lesions early during both pregnancies.

*Class B.—Mother Positive; Child Negative*

Case 3. Negative reaction in a child 3 years old, the brother of a baby 7 months old with syphilitic epiphysitis. In this case the mother and baby were both positive.

Case 4. The eldest brother, age 6 years, of a marked case of congenital lues, and a member of a family in which father, mother, three sisters and two brothers gave positive reactions.

Case 5. A baby 5 months old who was in good health up to three weeks before being seen.

Case 6. A baby 8 months old.

In cases 3, 4, 5 and 6 the reactions should have been the same as those of the mothers. The failure to obtain such a result may have been due either to the child being in an inactive state of syphilis, or probably to the reaction.

*Class C.—Mother Negative; Child Positive*

Case 7. Baby 5 weeks old. Very suggestive history.

Case 8. Child 11 years old.

Case 9. One of twins 3 months old. Mother and other twin were negative.

In these cases it is difficult to explain the differences in the reaction except that probably the mothers were in an inactive state of syphilis, or that the children had acquired the disease since birth. In none of these cases, however, is a history of acquired syphilis given. It must again be remembered that the Wassermann might have been at fault. In Case 9 I am at a loss to explain the result.

Of course, in all these irregular cases several examinations should have been made before accepting an irregular reaction. This was not possible in any of these cases, with the exception of Case 4, in which two Wassermann reactions gave the same negative result. In Case 9 the disease may have been acquired, but no evidences were present for such a conclusion.

In analyzing 114 cases, 59 were males, 49 females and in 6 the sex was not stated; 61 were white, 45 colored and 8 not stated. Of these cases, 64 gave a positive and 50 a negative Wassermann reaction. The histories and symptoms varied considerably in the positive cases, from 54.9 per cent. of the cases having snuffles to 11 per cent. having fissures. The order of frequency was as follows: snuffles, nasal discharge, miscarriages and still births, syphilitic wig, enlarged liver, scaling palms and soles, restlessness and irritability, skin eruption, fontanels unusually large, digestive disturbances, enlarged spleen, wide separation of sutures, enlarged glands and fissures.

Of interest in the fifty negative cases was the infrequency of the symptoms of syphilis, but the presence in some cases of one or two of the symptoms sufficiently striking to require the exclusion of syphilis. Aside from 20 per cent. of these cases having nasal discharge and there being a history of miscarriage in 18 per cent., the frequency of suspicious symptoms ranged from snuffles in 16 per cent. to scaling palms, fissures, unusually large fontanel, wide separation of sutures and enlarged glands, each being present in 2 per cent. of the cases.

The history of syphilis in the parents was admitted in only two instances, but the regularity with which the mother and child reacted in the same way, and also the regularity with which the mother, whose baby's blood was not examined, gave a reaction agreeing with the clinical diagnosis of the baby shows that when the child was specific the mother had also had syphilis, though probably in a modified form.

The ages of the children in this study ranged from 12 days to 15½ years. Of these, 12 were from 10 to 15½ years; 30 from 6 to 10 years; and 100 under 6 years. Of the latter, 85 were under 3 years; 62 under 1 year; 48 under 6 months; 34 under 3 months; 24 under 2 months, and 4 under 1 month.

A marked symptom in the cases giving a positive Wassermann was their underweight: in 85 per cent. the underweight was from several ounces to several pounds.

#### CONCLUSIONS

1. The Wassermann reaction is a reliable means of diagnosis in hereditary syphilis.

2. In many instances, because of the difficulty to obtain the blood from a very small baby, an examination of the mother's blood will suffice for corroborative diagnosis.

3. Some of the symptoms found in syphilis may be found in non-syphilitic cases, and a negative Wassermann is of decided help in the elimination of syphilis in the diagnosis of these cases.

4. It is of interest to note that the blood of the father and mother react in the same way.

5. The law of Colle has again been disproved, because if a syphilitic child is born, the mother, though apparently healthy, is in reality not so, but has had syphilis in a modified form, proof of which can be shown by the Wassermann reaction.

A negative Wassermann does not exclude syphilis, as it may be obtained in cases before the antibodies appear in the circulation, or later when there is a temporary disappearance of the antibodies from the lymphatic and vascular systems due to the spirochetes being in lesions of fibrous character. A positive Wassermann, on the other hand, may be obtained in scarlet fever, leprosy, trypanosomiasis and scleroderma. However, with a very few exceptions other than the foregoing the constancy with which a positive Wassermann is present in syphilis and a negative Wassermann is present in cases not syphilis makes it, it must be admitted, a most valuable corroborative method of diagnosis, especially in cases not presenting a typical clinical picture of syphilis.

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