Relation of Congenital Syphilis to Mental Deficiency

BY

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RELATION OF CONGENITAL SYPHILIS TO MENTAL DEFICIENCY.¹

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The general practitioner seldom receives a more unwelcome visitor than the mentally deficient child. The failure of the usual lines of treatment and the hopeless prognosis are too well known for discussion.

It is conservatively estimated that there are 5000 defective children in the State of Virginia. This number, of course, does not include the borderline cases nor the so-called latent types of enfeeblement. Those who have studied the problem most deeply, and who are best able to recognize the moron, usually consider that about 2 per cent. of the school population is feeble-minded, and the larger part of these belong to the high-grade class. It is generally conceded that of these 80 per cent. spring from families in whose lineage similar types may be found.

Naturally, syphilis has been considered as a possible causative factor for many years. In 1888 Shuttleworth examined 1000 cases of mentally deficient children by clinical methods alone and found evidences of syphilis in only 10. Others following him reported similar experiences. Even so recent a writer as Goddard² states that if ever syphilis produces feeble-mindedness, it does so only under most favorable conditions. Contemporaneous with this statement, Nonne³ found syphilis affecting the nervous system in less than 2 per cent. of his series of 1000 cases of nervous diseases.

More recent studies, however, have absolutely established the predisposition of the Treponema pallidum for nerve structures.

¹ Read before the Medical Society of Virginia at its Forty-seventh Annual Session, held at Norfolk, Va.
² Feeble-mindedness; its Causes and Consequences, New York, 1914.
³ Syphilis and the Nervous System, 1913.
Since the valuable contributions of Ravant, Altman, Gennerick and others it is now well known that the spinal fluid is involved early in practically every specific infection. In fact, with the almost universal dissemination of the infectious agent it is difficult to conceive how any organ escapes the infection.

With such a direct relationship existing between acquired syphilis and the central nervous system the frequency of congenital syphilis manifesting itself in its points of predilection should be of vital interest to us. The method of transmission of the spirochete from parent to child has been the subject of discussion for a number of years. Suffice it to say that in the light of our present knowledge the weight of evidence favors maternal transmission. Thus the offspring becomes directly infected with the organisms circulating in its blood. It is important to know that the inheritance of syphilis may take place, although the parental infection has occurred many years before. Nonne quotes a case of Fournier's in which the interval was fifteen years. It may manifest itself in early life in accordance with the usual signs, or the child may escape and later become a victim of the so-called latent or tardy stage.

The pathology in no way differs from that found in acquired infections. The disease may implicate the bloodvessels, meninges, or parenchyma. However, owing to the proximity of these structures and the protean manifestations of the organism it is not likely that one part would be involved without the others showing in the pathological process. The severe forms of restrictive development of the central nervous system are very important and to a certain extent characteristic of congenital lues. According to Nonne, malformations of the brain and cord not infrequently occur, as well as developmental deficiencies in the peripheral nerve roots. Jarisch has demonstrated at autopsy an actual decrease in the number of ganglion cells, a change in the protoplasm of the cells, and vitreous masses around the bloodvessels in the central nervous system. In a comprehensive report of 100 cases of late syphilis, Veeder found lesions of the nervous system in 47, or approximately one-half. Of these 23 were mentally deficient, 14 had cerebrospinal syphilis, and the remaining were divided among less frequent nervous conditions.

There may be a second way by which syphilis may affect the offspring. Quoting from Haberman: "Such parents are themselves constitutionally affected by the disease, and hence the germ cells uniting to form the embryo may also, one or both, be affected, depleted or invalidated, just how cannot be said. The fact remains that this embryo, without containing the infective organism itself, enters from the start on a darkly checkered career whose fate may

5 Ibid.
6 Ibid.
7 Loc. cit.
be almost as sinister as that of the really infected embryo." Such children will give no Wassermann reaction. They are not syphilitic but are neuropathically or psychopathically marred. Although this modus operandi is open to question it may seem to explain the negative Wassermann reactions sometimes found in the defective children of syphilitic parents.

The first important contribution bearing on the relation of congenital syphilis to mental deficiency was in 1914 by Fraser. In 99 feeble-minded children she found positive Wassermanns in 44.9 per cent. In only 8 of her series were any clinical signs of syphilis present. About the same time Watson in an examination of 204 cases found that 60 per cent. gave a positive reaction. According to some investigators, serological tests of the entire families in which defective children appear show that syphilis is associated with a still higher percentage of cases than is ascertained by the examination of the patient alone.

In Gordon's series of 75, which he studied especially from the stand-point of hereditary syphilis, mental defects of various degrees were present. He found a positive Wassermann in 50 per cent. of his cases. The spinal fluid was examined in 17, all of which reacted positively, with the exception of 3 cases of feeble-mindedness associated with functional nervous disorders.

The object of this paper is to report the results of the serological studies on the first 50 cases admitted to the psychological clinic of the Medical College of Virginia during the past year. The material for this clinic is drawn largely from the retarded classes of the Richmond Public schools, the juvenile court, and other agencies interested in the social welfare of the city. They were sent for the purpose of obtaining the estimate of their mental development as well as a clue to any factors influencing their mental and moral stamina. In addition to the usual physical and neurological examinations, various psychological tests were employed, the results of which are obviously unnecessary in this review. In this series 21, or 42 per cent., gave a positive Wassermann reaction. Their ages varied from seven to sixteen years, and with the exception of 1 all were white. In the accompanying chart of the positive cases the mental level obtained by the Binet-Simon questionnaire, general health, physical defects, and type of temperament are noted. It will be seen that the series is composed largely of the middle and high-grade imbecile and only exceptionally with the low-grade idiot. This in part may account for the relatively low percentage of Wassermanns found in institutions for the feeble-minded. With two exceptions the general health of the children was uniformly good, a fact which made it difficult for us to impress upon the families the necessity for persistent treatment.

\footnote{A Jour. Mental Sc., October, 1913, p. 234.} \footnote{Gordon: Arch. Pediat., 1916, xxxiii, 273.}
Quite at variance with other reports is the striking relative absence of congenital syphilis or organic lesions of the nervous system. Approximately one-half showed a general glandular enlargement. Defects of vision, tonsils, etc., were found no more frequently than in the non-ocular series. The most interesting and suggestive physical aspect was the malformation and caries of the teeth. One of three types were present in each of our cases. The most frequent form was the small, widely separated teeth, with well-marked serrations on the upper and lower incisors. This was associated with moderate caries, especially about the neck of the tooth. The second type was similar to the first, but with a much more advanced grade of dental infection. The least common type was the usual set of teeth riddled with areas of decay. In only 2 of the 21 cases were the teeth even approximately normal. No typical Hutchinson teeth were observed.

Temperamentally the series presented an interesting picture; 14 of the 21 were either incorrigible, disobedient, or displayed fits of temper unlike those usually seen in the normal child. Although our series is too small from which to draw definite conclusions, we are not disposed to feel that the listless, low-grade idiot is so likely to be of syphilitic origin as the high-strung, passionate child with wayward tendencies. It has been shown that the percentage of positive Wassermanns is materially lessened after the sixteenth year.

The recognition of syphilis as a factor in the production of mental enfeeblement is of the uttermost importance in their proper handling and treatment. According to Gordon, where gross malformations do not exist, encouraging therapeutic results are obtained. Nonne speaks of various organic and functional nervous disorders in children with inherited syphilis who improved and some recovered after antisypilotic treatment. Fournier, likewise, has reported satisfactory results in the treatment of the vague nervous and psychic disorders of congenital syphilitic origin.

If it can be established that inherited syphilis is a frequent factor in the production of the subnormal mentalities the problem of the feeble-minded will present a more hopeful outlook. Recalling the pathology of syphilitic lesions of the brain, it is useless to hope for an amelioration of symptoms in those cases in which the process is long-standing or is destructive in character. Therefore the early recognition of the condition is imperative and our attention should be directed more especially to those borderline types in which mild mental defects are associated with moral delinquencies. It must be borne in mind that the syphilitic organism can be readily transmitted to the third generation and that only a very small percentage of congenital syphilis can be recognized by clinical methods alone, and no study of an enfeebled child should be considered complete without a Wassermann test. If a negative result is obtained, further

13 Loc. cit.
inquiry and examination should be made of the parents and other members of the family. Should we be able by this means to reclaim even a few of those destined to become a burden to society and the State our efforts will not have been in vain.

<table>
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<th>No.</th>
<th>Age</th>
<th>Mental age</th>
<th>Years back</th>
<th>General health</th>
<th>Physical defects</th>
<th>Temperament</th>
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<tr>
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<td>Sensitive</td>
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<td>Sullen</td>
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<td>5.0</td>
<td>Negative</td>
<td>Teeth; glands</td>
<td>Sex; habits; incorrigible</td>
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<td>8.0</td>
<td>Negative</td>
<td>External squint and teeth</td>
<td>Slow and sullen</td>
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