SYPHILIS IN THE PARENTS AS A CAUSE OF FEEBLE-MINDEDNESS IN THE CHILDREN.*

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In the popular mind a goodly percentage of feeble-mindedness is accounted for by the syphilitic condition of one or both parents. Among the profession great differences of opinion exist, and the percentages vary from two or three up to thirty or forty, and in extreme cases to even double the last figures.

That syphilis occurs in the parents of defective children, or that the defectives themselves give a positive Wassermann reaction in such percentages of the cases according to the group studied must be accepted. But we would call the reader's attention to the fact that such an admission has nothing to do with the cause of feeble-mindedness. If one found upon investigation that 30 per cent of the parents of defectives were subject to coryza, one would not be likely to attribute the mental defect of the children to the coryza of the parents. Yet it is as logical as most of the conclusions in regard to syphilis. Apparently the explanation of our

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easy acceptance of the conclusion in the one case, and not in the other, is that we feel that syphilis, being such a dread disease, is capable of causing all the evil consequences that may occur to us.

In reality, we all know that the causal relation is exceedingly difficult to establish. To prove such a relation in any important situation is enough to insure a man a place in the world's Hall of Fame.

If two things stand in such relation to each other that whenever one is present the other is present, and when one is absent the other is absent, such two things are either related as a cause and effect, or are both the effect of some other cause. The usual method of procedure when a causal relation is suspected is to try to eliminate all other possible causes and see if the effect follows from the one supposed cause.

This has rarely been attempted in the case of syphilis and feeble-mindedness. Observers have been content to note that the parents were syphilitic in so many cases, and without noting that they were also feeble-minded, have concluded that the syphilis was the cause. Or they find positive Wassermanns in so many defective children, and never consider that these children had suffered from meningitis or other equally serious diseases.

In view of the foregoing I shall not take your time with extensive quotations from the literature. Unfortunately it largely falls under the criticism above made, and either makes no attempt to establish the relation in question (although it may often be quoted as though it did), or if the attempt is made the conclusion is illogical. In this connection I may say that our own results, which I shall give in this paper, are wholly negative. I have analyzed them, with the result that I find it impossible to prove that syphilis in the parents is a cause of feeble-mindedness in the children.

Among the more important literature we find Tredgold says: "There is no doubt that syphilis is capable of producing an impairment of germ cell, resulting in a condition of primary amentia, probably undistinguishable from other cases, or which may possess hitherto unrecognized particular features. Or, the poison may act upon the embryo after fertilization." He is disposed to think that congenital syphilis alone rarely produces distinct amentia; a neuropathic taint is likely to be present. If the child is predisposed to nervousness, the syphilis will find the weak spot. His experience showed 2.5 per cent of cases to be syphilitic, that is, cases directly due to the specific virus, but in many other cases the history is misleading, detection difficult. He refers to various opinions resulting from Wassermann tests:

France: Raviart and others, 30 per cent.
Germany: Krober, 21 per cent; Kellner, 3.7 per cent.
Thomsen and others (Serum Inst., Copenhagen, presumably), 1.5 per cent.
America: Atwood, Jour. Amer. Med. Asso., v. 56, 1911, 15 per cent.
England: Dean, Lancet, July 23, 1910, 15.4 per cent.
Thomas, Report of the Lunacy Commission, 1913, 4.8 per cent.
Gordon, Lancet, September 20, 1913, 16.5 per cent.
Gordon examined 400 cases, various forms of congenital mental deficiency; results analyzed according to clinical conditions. In this simple variety of amentia, there was positive reaction in 11.9 per cent without paralysis, 31.8 with paralysis. Several others reacting negatively, yet showed definite syphilitic lesions (Tredgold, pp. 267-92, Mental Deficiency, 1914).

Mott says: “It may be a biological heresy, but it is firmly rooted in the minds of the majority of practising physicians that a chronic blood-poisoning (especially when occurring in successive generations) produced by the racial poisons, alcohol, syphilis and tuberculosis, can per se cause degeneracy in a healthy stock, by a pathological mutation of the germ plasm, which can be transmitted.”

Felix Plaut says: “Whether there exists a form of congenital feeble-mindedness of severe grade, due to syphilis, is at least questionable . . . it can scarcely be reckoned a notable factor in the origin or idiocy.”

Atwood, surprised at the figures of Lippmann (33.8 per cent of idiots syphilitic) undertook some investigation, tests made by Noguchi, at the Rockefeller Institute, with 204 idiots of low grade, various types, from 5 to 50 years of age. Thirty patients, or 14.7 per cent, reacted positively, 20 of them women (all patients under 40 years who reacted positively), stigmata apparent in only 4, 23 per cent were diplegics, seeming to indicate that there are causative lesions due to syphilis, which result in such conditions as incomplete development of the vascular system.

Moulton at Faribault, Minn., found in 600 cases of feeble-minded children 12.8 per cent positive Wassermanns.

Dawson at Eldridge, Cal., found 5 per cent positive in an examination of 1,113 cases. He accounts for small percentage on basis of small amount of syphilis on the Pacific Coast.

Finally, Mott, F. W. (Congenital Syphilis and Feeble-mindedness, Archives of Neurology and Psychiatry, v. 5, 1911, p. 1-51), says that his earlier views of the seriousness of the subject, as expressed to the Royal Commission, have been much strengthened by personal investigations and results of tests in various countries by other parties. He thinks the higher German percentages probably correct, more carefully obtained than the English. He says it is “important to decide whether congenital syphilis is a cause of arrest of development of the brain (apart from its causing gross lesions) either by the influence of a chemical toxin, or some failure of sufficiency of a biochemical substance upon the developing embryo” (p. 1). The author appears to commit himself to this view, though cautiously. He says: “If syphilis can produce bodily infantilism, including arrest of development of the reproductive organs—a not infrequent condition in juvenile general paralysis—surely there is no reason why it may not lead to arrest of development of the most highly differentiated and specialized tissues of the body, i.e., the cerebral cortex” (p. 17). He shows that syphilitic conditions which prevent the escape of the cerebrospinal fluid from the lateral ventricles may occasion hydrocephalus, the condition being the result of an accumulation of the spinal fluid in
the lateral ventricles: infancy, childhood and adolescence, in congenital syphilis are subject to the same forms of brain syphilis as the adult with acquired syphilis: congenital syphilis is not important as a factor in the production of encephalitis, which is more probably due to asphyxial conditions at birth, head injury, or infectious diseases of childhood. Syphilis may influence the germ plasm and per se lead to production of imbecility, it is positive that a neuropathic taint, latent some time, will be brought out by it. He ranks it with alcoholism—"Were it not for the fact that both these poisons are deadly as well as devitalizing, the effects on humanity would be cumulative and lead to racial annihilation."

Our own results are as follows:

We have tested 81 cases of feeble-minded children by the modified Noguchi method, using both blood serum and spinal fluid. Each case was very carefully checked up by the use of five different antigens. Of the 81 cases, 20 or 24.7 per cent were positive. This result, however, is of little or no value as bearing upon the question of the percentage of feeble-minded who show positive Wassermanns, since these cases were selected in two ways. First we began with our low grade or idiot group. Second, we later added some cases whose family histories we were studying, and in which we found a history of syphilis, and were accordingly desirous of knowing the condition of the child in the institution. The cases ranged in age from 9 to 68 and in mentality from 1 to 10. All but 6 were males. The ages of those giving a positive reaction were distributed as follows: Mentality 1, three cases; 2, eight cases; 3, three cases; 4, three cases; 6, two cases; 9, one case. The latter was the only one of the group that showed evidence of having had a direct infection. Of the 81 cases studied, we shall confine ourselves for the rest of this paper to the 70 including the 20 positives whose family histories we have studied.

Of the 20 cases giving a positive result five showed a history of syphilis somewhere in the family. In one, the father's father and father's mother were syphilitic. In one, the father, mother and sister were syphilitic. In one, the mother's aunt was syphilitic; in one, the father, and in another one, the father's brother. The other 15 positives had no record of syphilis in their families, so far as we could obtain the facts.

Of those giving a negative result, nine had a history of syphilis in the family. In seven cases, it was the father who was syphilitic; in one case, the former husband of the mother, and in one case, the paternal aunt.

The 20 positives are further grouped according to our classification of causes as follows: Nine belong to the group of hereditary feeble-minded; three to the neuropathic ancestry; three to meningitis, two were mongolian type; two to accidents before birth, and one is unclassified as to cause, since no cause was assigned, and none was found in the family history, the brothers, sisters, parents, uncles and aunts all being normal and free from neuropathic taint. One brother, indeed, had a defective child, a case of acromegaly, but since nothing was known of this brother's wife, we have no basis for getting at the cause of this case. These facts are recapitulated, and given in tabular form herewith.
The difficulty of proving that the syphilis in the parents has caused the feeble-mindedness in the children in these cases is obvious. Every one of these cases of feeble-mindedness is accounted for on some other basis than syphilis, which is at least equally as good as the hypothesis of syphilis, and in most cases vastly more probable. Of the 14 cases, 5 positives and 9 negatives, showing a history of syphilis in the family, all but 5 are clearly cases of hereditary feeblemindedness.

If one were inclined to deny the hypothesis of hereditary feeble-mindedness, and claim that such families might be all syphilitic, one is confronted by the fact that in a large percentage of these cases, there are normal as well as feebleminded children born to the same parents. Indeed this is a most puzzling fact in a number of cases of known syphilitic parents, that is to say, some of their children are normal while others are feeble-minded.

If syphilis is a cause of feeble-mindedness, how shall we account for syphilitic parents having any normal children? We recognize, of course, that there is undoubtedly much more syphilis in these families than our records show, and the fifteen positives where no syphilis is found in the family undoubtedly had syphilitic parents, although we could not get this history. We are compelled to confine our discussion to those cases where the history is known.

I shall now show you some charts, illustrating the foregoing conditions and facts.

First, the five positive cases in which there is no syphilis in the family.

Second, some of the negative cases with a history of syphilis in the family. It will be noted that of the 67 cases under discussion where there is no history of syphilis in the family, there are only fifteen positives among our children. Since only one of these fifteen showed evidence of having direct infection, we must assume that it was hereditary syphilis in 14 of these cases, therefore that these 14 cases should, had we been able to get the history, have shown syphilis somewhere
in the family. But this is only 14 out of 66 cases.

In conclusion, it would seem that of the cases under consideration, all of the feeble-mindedness is accounted for on an hypothesis equally good and for the most part vastly better than the hypothesis that syphilis is a cause. Furthermore, is not the a priori argument valid in this case. If syphilis is a cause of feeble-mindedness, and if syphilis is as prevalent as it is believed to be, can we escape the conviction that the percentage of feeble-minded people would be enormously increased over our present estimate? Indeed, can you gentlemen not furnish from your patients more instances of parents who are syphilitic but had normal children than of defective children resulting from such cases? So far as it is evident from this study, it would seem that syphilis causes general paralysis, death in infancy, miscarriage, physical deformities and abnormalities, but not feeble-mindedness. In other words, it is too powerful a poison to merely maim the offspring. It kills.

Discussion.

Dr. William T. Shanahan, Sonyea: Inasmuch as the hour is so late, there are but one or two points to which I wish to refer at this time. In 700 Wassermann tests made at the Craig Colony on epileptics of all ages, the number of positive reactions obtained was less than 3 per cent, many of these reactions being one or two plus, few four plus. In the large German Institution at Bielefeld, in 800 Wassermann tests, made on a similar group of epileptics, the percentage of positives was likewise small. Among the epileptics seen in the special institutions for