

ACQUIRED SYPHILIS IN CHILDREN*

REPORT OF SIX CASES

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The routine examination and follow-up of asexual familial contacts of patients suffering from early infectious syphilis is not commonly carried out. This is due to a widely held belief that asexually acquired syphilis is a relatively rare condition. It would appear possible that consideration of recent surveys of the non-venereal treponematoses, particularly that of endemic syphilis in Bosnia and Herzegovina (Grin, 1952), may lead to a modification of this view.

During recent years attention has been drawn to the subject of acquired syphilis in children by several writers. Waugh (1938), Schoch and Long (1939), Smith (1939), Dyar and Goodwin (1941), Creswell and others (1943), and Eisenberg and others (1949) have reported cases in the United States of America, and Wofinden (1945) and Murrell and Gray (1947) have reported cases in Great Britain.

Cases reported in the Literature

Waugh (1938), who reviewed the literature in detail, stated that, although numerous cases of acquired syphilis in children had been reported from the middle of the 19th to the first few years of the 20th century, few reports had appeared after that date. He found and examined personally 35 cases of acquired syphilis in infants and children aged 5 months to 14 years in the six years 1931 to 1936 inclusive. In the age group 5 months to 11 years, 24 cases occurred, 41 per cent. of them being 2 years old or less; 22 cases were due to asexual transmission. In one family five children were infected, their ages ranging from 1 to 9 years. During the same period there were 183 cases of congenital syphilis, making the ratio of acquired to congenital infection 1 : 5.25. This distribution corresponds with that reported by Fruhinsholz (1903), where the ratio of acquired to congenital infection in a series of 96 cases is given as 1 : 7, and with that reported by Grenet, Honnoré, and Jeanjean (1922), where the corresponding figures were 1 : 6.8 in a series of 102 cases.

Smith (1939) reported a series of 125 children of 10 years old and under with acquired syphilis. These cases were gathered from the records of several large paediatric and syphilis clinics in the Eastern and Southern States of America during the period 1920 to 1937; 43 were due to attempted sexual intercourse. In one hospital, in which there were 45 cases of acquired syphilis, the ratio of acquired to congenital infection was 1 : 23 and to early acquired syphilis in adults 1 : 100. Smith stresses that no true evaluation of the incidence can be obtained from the group, as the cases were derived from several sources and many were found only after a careful personal search of the records filed as congenital syphilis.

Schoch and Long (1939) reported four cases of primary syphilis in four sisters aged 6 to 11 years. The infection was acquired through sexual contact by the two elder children.

Dyar and Goodwin (1941) reported nineteen cases of acquired syphilis in children under 14 years of age occurring between January 1, 1938, and November 1, 1939. During the same period 76 cases of congenital syphilis were observed, making the ratio of acquired to congenital infection 1 : 4; eleven cases were due to sexual transmission. The authors noted the relatively high incidence of new infections found in household contacts (seven out of 58 examined), but they regarded this not as proof of the extragenital transmission of the disease but as proof of the high incidence of syphilis in the community.

Creswell and others (1943) reported three cases of asexually acquired syphilis in children aged 1 year and 11 months, 1 year and 10 months, and the next older brother of Case 2 (age not stated). Cases 1 and 2 had secondary syphilis and Case 3 early latent syphilis. They believe that primary lesions are frequently unrecognized in infants with acquired syphilis.

Eisenberg and others (1949) state that very little information about the asexual transmission of syphilis can be found in the recent literature. They conducted an investigation over a period of one year (1947) in one of the clinics of the Venereal Disease Control Program, Chicago Health Department, and reported twenty cases of asexually acquired infectious syphilis in children under 10 years of age. These children were all exposed to an

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adult in the household or family who had early infectious syphilis. Four patients were male, and sixteen female, and the average age was below 5 years. During the year 1947 the total number of cases of secondary syphilis diagnosed (including the twenty cases listed above) was 721. This gives the incidence rate of asexually acquired syphilis in children as 2.8 per cent. It would be interesting to know how many of the 701 adult patients had young children living with them. All the cases exhibited a generalized maculo-papular rash, no primary lesion being found. This supports the suggestion of Smith (1939), Creswell and others (1943), and Tucker and Mulherin (1948) that extra-genital chancres in children are smaller than in adults and easily overlooked. In this point the infection resembles the non-venerel treponematoses in which the absence of a primary sore is a notable feature. Several of the children were brought to the clinic by a member of the family because of an exanthema, but the greater number was found as a result of contact tracing.

Wofinden (1945) reported three cases of acquired syphilis in children. The first, a boy aged 2 years and 11 months, had secondary syphilis acquired from either his mother or father whose bed he shared; the second, a boy aged 7 years, had a gumma of the neck, the parents and family having no evidence or history of syphilis; the third, a girl aged 6 years, had secondary syphilis acquired from an aunt with whom she slept.

Murrell and Gray (1947) reported six cases of acquired syphilis in children during a 5-year period. All had secondary syphilis. The importance of family contact in transmitting infection is shown by the family history they record in which a 20-months-old boy with congenital syphilis infected his aunt aged 16 years and a step-sister aged 22 years. They state that poor environmental conditions are not invariable, some infections through contact having occurred in professional homes.

Present Series

In this paper six cases of acquired syphilis in children and one possible re-infection are reported. They were diagnosed and treated in a small female clinic (Bootle General Hospital, Liverpool) during the seven years 1946 to 1953. During this period ten new cases of congenital syphilis in children aged 14 years and under were diagnosed, and 45 cases of primary and secondary syphilis in adult females.

Case 1, girl, aged 7 years. March 13, 1946, admitted to medical ward as ? diabetes. History of ulceration of tongue 3 months, vulvitis 1 week, generalized adenitis, and loss of hair. Wassermann reaction strong positive. March 20, 1946, referred to special clinic from medical ward.

Examination.—No signs of secondary syphilis were present, except some cervical and inguinal adenopathy and scanty hair.

Diagnosis.—Syphilis latent in first year.

Treatment (March 3, 1946, to August 7, 1947).—Three courses of arsenic and bismuth, each consisting of twelve

weekly injections of Kharsulphan 0.15 g. and bismuth oxychloride 0.1 g. in aqueous suspension.

(March 31 to April 5, 1947).—Penicillin in arachis oil 600,000 i.u. daily for 6 days.

Wassermann Reaction.—1.8.46; 20.3.47; 15.1.48; 30.9.48, all negative.

Follow-up.—Patient ceased to attend before final tests of cure.

Family History.—The mother of this patient was interviewed in March, 1946. She had been separated from her husband for 3 years and had been living with a consort for 2½ years. The latter was said to have received penicillin injections in hospital for 10 days for "metal poisoning" in January, 1945; 2 to 3 months later the mother had developed a sore throat, swelling of the neck, and irritation of the vulva. The elder daughter aged 12 (Case 2) developed a similar attack 4 months after the mother. The attack in Case 1 was similar but had lasted longer. The mother's Wassermann reaction was strongly positive. The consort's case was traced and he was found to have been treated for secondary syphilis by penicillin in divided dosage 40,000 i.u. 3-hourly for 10 days, and to have defaulted after treatment.

Case 2, girl, aged 12 years, sister of Case 1. March 27, 1946, first attendance. History of sore tongue, glands in neck, and vulvitis 9 months previously.

Examination.—No signs of congenital or acquired syphilis except very thin hair. Wassermann reaction strong positive.

Diagnosis.—Latent syphilis.

Treatment.—(April 3 to November 21, 1946.) Two courses of arsenic and bismuth consisting of twelve weekly injections of Kharsulphan 0.15 g. and bismuth oxychloride 0.1 g. in aqueous suspension. Third course stopped after second injection owing to history of blood in urine for 3 days following injection and bruises of the arms, face, and legs. Subcutaneous haemorrhages of the face, legs, and arms were found, and purpura haemorrhagica diagnosed. The differential blood count and platelet count (after 2 weeks delay) were within normal limits.

(March 31 to April 5, 1947.) Penicillin in arachis oil 600,000 i.u. daily for 6 days, total 3.6 mega units.

Wassermann Reaction.—1.8.46, negative; 20.3.47, doubtful; 31.3.47; 15.1.48; 4.10.48; 7.3.49, all negative.

Follow-up.—Lumbar puncture refused, no clinical signs, discharged cured.

Case 3, boy, aged 2½ years, contact of sisters, Cases 1 and 2.

March 27, 1946, first attendance. No history of any clinical signs.

Examination.—No signs of congenital or acquired syphilis. Wassermann reaction, 27.3.46, strong positive.

Diagnosis.—Latent syphilis.

Treatment.—(April 3, 1946, to August 7, 1947.) Two courses of arsenic and bismuth consisting of twelve weekly injections of Kharsulphan 0.15 g. and bismuth oxychloride 0.05 g. in aqueous suspension.

(March 31 to April 5, 1947.) Penicillin in arachis oil 600,000 i.u. daily for 6 days—total 3.6 mega units.

Wassermann Reaction.—15.8.46 weak positive; 20.3.47; 15.1.48; 7.10.48, negative.

Follow-up.—He ceased to attend before final test of cure could be made.

The fourth and last child in this family, a baby aged 6 months, had no signs of congenital or acquired syphilis and the Wassermann reactions were negative.

Case 4, girl, aged 16 months. Contact of mother (secondary syphilis) and brother aged 4 months (congenital syphilis). Routine Wassermann reaction as contact on May 12, 1947, was negative.

No complaints, and no signs of congenital or acquired syphilis. Asked to report for final routine Wassermann reaction in 3 months. Returned August 25, 1947, with no complaints, and no clinical signs. Wassermann reaction strong positive. On September 1, 1947, the mother showed no surprise at the result of Wassermann reaction, and stated that the child had been unwell for 5–6 days, would not run about, and cried if caught by arm or hand "as though her bones ached, just like I felt". On examination some tenderness was found of the distal extremities of radius and ulna, and a few papules on the buttocks. Repeat Wassermann reaction strong positive.

Diagnosis.—Secondary syphilis.

Treatment.—One course of arsenic, bismuth, and penicillin combined as follows:

(September 1 to November 24, 1947.) Stabilarsan 0.075 g. increasing to 0.15 g., and bismuth oxychloride 0.04 g. once weekly for 12 weeks.

(September 11 to 15, 1947.) Penicillin in arachis oil 600,000 i.u. daily for 5 days—total 3 mega units.

(April 19 to 23, 1948.) Repeat course of penicillin.

Wassermann Reaction.—26.1.48, weak positive. 16.7.48; 4.10.48; 30.6.49; 12.1.50; 22.6.50, all negative.

Follow-up.—Defaulted until February 4, 1952. Wassermann reaction doubtful. Repeat Wassermann reaction negative. No clinical signs. Discharged cured.

Case 5, girl, aged 11 years, daughter of patient who attended on February 2, 1951, complaining of "swelling inside" for 7 days and discharge for 1 day. Her husband was working in another town, the last marital coitus 6 weeks previously, and extra-marital exposure denied. Examination revealed a deep ulceration of right labium minus, superficial ulceration left labium minus. Bilateral inguinal adenopathy. Serum for *Treponema pallidum* (one specimen) negative. Wassermann reaction strong positive. The mother was warned of the possibility of infecting her daughter with whom she slept.

The daughter attended 10 days later (on February 15, 1951) with a history of "swelling below" for 2 days.

Examination.—Oedema of clitoris and adjoining labia. Erosive ulceration of clitoris region. Bilateral inguinal adenopathy. Serum for *Treponema pallidum* (two specimens)—negative. Wassermann reaction—doubtful. Meinicke reaction—weak positive.

February 22, 1951, Wassermann reaction (quantitative) positive 1/40; doubtful 1/80.

February 26, 1951, Wassermann reaction (quantitative) positive 1/40.

March 1, 1951, Wassermann reaction strong positive.

Diagnosis.—Primary syphilis.

Treatment (March 1 to 29, 1951).—Twice weekly injections of procaine penicillin with 2 per cent. aluminium stearate in oil (PAM) 600,000 i.u. and bismuth oxychloride 0.1 g. in aqueous suspension. Attendance was irregular and the patient finally defaulted after the seventh injection. The mother had to find employment as the father had stopped supporting the family.

(April 30 to May 9, 1951.) Course of PAM 600,000 i.u. daily for 8 days—total 4.8 mega units.

June 18, 1951. Wassermann reaction negative. The patient then defaulted and her new address was not obtained from her grandmother at her previous home until November 12, 1951, when information was obtained from the grandmother that the family had joined the father who was now working in Yorkshire.

The personal transfer record of mother and daughter was sent to the new address, and a letter went to the Medical Officer at the Hull Clinic reporting this and asking for welfare visits in case of non-attendance. On November 19, 1951, the mother and daughter returned to Liverpool as they did not wish to attend the new clinic.

The Wassermann reactions of mother* and daughter were now strong positive, and it was learned that the father had not attended the clinic and refused to do so.

Examination.—No clinical signs.

November 26, 1951, repeat Wassermann reaction strong positive.

Treatment.—(November 26 to December 3, 1951.) PAM 600,000 i.u. daily for 8 days—total 4.8 mega units.

Wassermann Reaction.—31.12.51 and 31.1.52—strong positive; 3.3.52; 21.4.52; 19.6.52; 17.7.52; 22.9.52; 20.10.52; 12.1.53; 23.3.53 and 11.5.53—all negative.

Follow-up.—The patient is continuing under observation.

Case 6, female, aged 9 years, sister of Case 5. January 31, 1952, brought to clinic by sister with note from mother, who was working, stating that the child had "irritation". Duration of symptoms not stated and children unable to supply answer.

* Mother's Wassermann reactions had been negative on April 30 and June 18, 1951, after a standard course of PAM and bismuth. PAM 600,000 i.u. and bismuth oxychloride 0.1 g. in aqueous suspension twice weekly for 6 weeks (February 8 to March 29, 1951).

Examination.—Oedema of clitoris region. Erosive ulceration of opposing surfaces of labia majora. Bilateral inguinal adenopathy, tender on palpation. Wassermann and Meinicke reactions strong positive. Serum negative for *Treponema pallida*.

Diagnosis.—Primary syphilis.

Treatment.—(February 4 to 13, 1952.) PAM 600,000 i.u. daily for 10 days—total 6 mega units. By February 11, 1952, the erosions were healed, the oedema almost subsided, the inguinal glands much smaller in size, and there was no tenderness on palpation.

Wassermann Reaction.—17.3.52; 21.4.52; 12.5.52; 17.7.52; 29.9.52; 20.10.52; 12.1.53; 23.3.53; 21.5.53—all negative.

Follow-up.—The patient is continuing under observation.

Comment

Cases 1, 2, and 3 illustrate the ease with which a diagnosis of early syphilis in a child is overlooked. A primary lesion was not observed in any of the children and the mother was unable to recall any signs suggestive of the secondary stage in Case 2, indicating that they were probably minor in character. The apparent similarity of the secondary manifestations in Cases 1 and 3 to those in the mother is interesting; no history of a rash was obtainable in any of the family. The reversal of the Wassermann reaction by the end of the first course of arsenic and bismuth confirms the recent character of the infection in Cases 2 and 3.

No primary lesion was observed in Case 4, although the mother was warned about the possibility of its appearance and asked to report any lesion she found. That she was of an observant nature is demonstrated by her observations on the child's symptoms at the time of the second blood test. The secondary signs were of a minor character, although it is possible that they would have developed further in the absence of treatment.

In Cases 5 and 6 it is impossible to exclude a diagnosis of sexual transmission by the father. The mother vigorously denied the possibility and there was no evidence of sexual play. Case 5 developed symptoms 7 weeks after the last contact with the father and 15 days after the appearance of symptoms in the mother whose bed she shared. The short duration of the infection is suggested by the results of the quantitative Wassermann reactions. The mother appeared genuinely upset at the diagnosis, and it is difficult to believe that she would have taken the children to the father in Yorkshire had she thought there was any danger to them from him. Primary lesions were present in both children and must have resulted from genital contact with either

the mother or the father. The children, on being questioned, admitted that sometimes they had shared their parents' bed in Yorkshire when "the landlady needed our bed for someone else".

It is impossible to say whether serological relapse or re-infection took place in Case 5 and her mother during the visit to Yorkshire. In the case of the mother, who had attended regularly for a standard course of treatment and whose Wassermann reaction had reverted to negative within a month and had remained negative for 4 months before the visit, re-infection would appear more likely.

These cases support the suggestion of Waugh (1939) and Eisenberg and others (1949) that acquired syphilis in children is more common than is generally supposed.

The importance of contact tracing in revealing cases is demonstrated. This confirms the findings of Eisenberg and others (1949), in whose series the larger proportion of cases were found as a result of contact tracing. The high incidence of new infections found in household contacts (seven out of 58 examined) was noted by Dyar and Goodwin (1941), although they attributed this not to extra-genital transmission of the disease but to the high incidence of syphilis in the community.

It is suggested that the intimate relationship within the family, especially between the mother and the child, makes the asexual transmission of syphilis a not unlikely occurrence. The infectious mother is of particular danger to the infant because of the common practice of moistening with her own saliva the teats of feeding bottles and dummies, and of testing the temperature of the food by tasting from the infant's spoon; also infants and young children often thrust their fingers into their mother's mouth and then into their own. During the teething period superficial trauma to the mucous membrane would facilitate the entry of *Treponema pallidum*, and any developing lesion would be difficult to observe owing to the fact that the infant resents and obstructs examination of the mouth at this time. A high incidence of infection in the lower age-groups was recorded by Waugh (1939), in whose series 41 per cent. were aged 2 years or less, and by Eisenberg and others (1949), in whose series the average age was below 5 years.

The early recognition of acquired syphilis in children is important for three reasons:

- (1) The prevention of the transmission of the disease to other children.
- (2) The prevention by adequate treatment of the development of cardiovascular and neurological signs, which more commonly result from acquired than from congenital infection (Moore, 1941).

(3) The prevention of the decline in bodily resistance to intercurrent disease which occurs in the absence of treatment (Ross, 1953).

Summary

Six cases of acquired syphilis in children and one possible re-infection are reported. These occurred in a small female clinic during the 7 years 1946 to 1953, during which ten new cases of congenital syphilis in children of 14 years and under and 45 cases of primary and secondary syphilis in adult females were diagnosed. These figures are too small to be of statistical importance, but they tend to support the belief expressed by several writers that the possibility of the asexual transmission of syphilis should receive greater attention.

It is suggested that in every instance routine examination and follow-up of the familial contacts of patients with early infectious syphilis should be carried out.

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