PREGNANCY COMPLICATED BY TYPHOID FEVER WITH HEMORRHAGE AND RELAPSE; DELIVERY AT TERM; REPORT OF THE BACTERIOLOGICAL AND SEROLOGICAL FINDINGS IN MOTHER AND CHILD.*

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(With one chart.)

In typhoid fever of pregnancy the prognosis for the fetus is grave, since in more than two-thirds of the cases abortion, miscarriage, or premature delivery(1) are caused by the toxemia(2) transmitted from the mother or by the pyrexia acting as an insolation on the fetus.(3) These two conditions also tend to produce uterine hemorrhage,(4) separation of the placenta, nephritis, and hyaline degeneration of the uterine musculature as well as of the chorionic villi(5). The last-mentioned changes may result in asphyxiation and death of the fetus and the induction of labor.

The typhoid bacillus has been found in the fetal blood(6)(7), especially in the later months of gestation; and a positive Widal has

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also been demonstrated(8)(9)(10). The case I am about to report presented an opportunity for investigating these possibilities, and since it presents a number of noteworthy clinical features, it is deemed worthy of reporting.*

Course of the Typhoid Fever.—Mrs. A. Y., age thirty-one years, a native of Austria, para-iii, was admitted to Beth Israel Hospital on July 4, 1912. She had measles during childhood but no other illness. Her habits were good.

Present Illness.—Five days before admission the patient had complained of constipation and fever. The fever continued for three days before admission with afternoon exacerbations, accompanied by extreme weakness and prostration, forcing her to bed.

The day before admission she complained of slight frontal and occipital headache. On physical examination the patient appeared well nourished but was greatly prostrated. There was a slight pharyngitis. Sibilant and sonorous râles were audible all over the chest. A systolic murmur which was not transmitted was heard over the pulmonic area and at the apex of the heart. The radial pulse was 110 beats per minute, regular, rythmical, small, soft, but not dicrotic; the vessel wall was not palpable. The abdomen was tympanitic in its upper part; no tenderness, rigidity, or signs of fluid. There was a mass palpable one finger's breadth above the pubis in the median line. The fetal heart sounds were not heard. There were a few roseolæ scattered over the abdomen and back. The vaginal and breast changes of pregnancy were present. There was a slight edema of the right ankle.

Blood examination on July 5, 1912, showed 4,800,000 erythrocytes and no abnormal red cells. The hemoglobin was 90 per cent. The leucocytes numbered 5500 with 25 per cent. lymphocytes and 75 per cent. polynuclear neutrophiles.

Urinalysis every three days gave: a specific gravity ranging from 1015 to 1025, an acid reaction, traces of albumin only on three occasions, a positive diazo reaction only on one occasion (August 1); repeated microscopic examination showed an occasional hyaline and granular cast (on one examination), but no other abnormality.

The important bedside notes during the course of the illness are as follows:

The temperature was intermittent from July 18 to 24 and on July 25 rose to 102° F. and 103° F., continuing till 28 when it rose to 105.6° F. in the afternoon (see fever chart).

The abdomen was becoming increasingly tender, at first on the left side and then on the right. The stools were carefully watched for blood macroscopically and microscopically and the head of the bed was elevated. New rose spots appeared on the abdomen. The

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increased fever, the abdominal signs and the new roseolæ were interpreted as an intercurrent relapse.

August 2. The stool showed blood microscopically and the test for occult blood with guaiac was positive. The pulse and temperature were now recorded every hour. No noteworthy changes were observed.

August 24. The temperature for the past ten days has been below 100° F. The abdominal tenderness has entirely disappeared. The patient was propped up in bed for half an hour at a time. Convalescence was now established and the recovery was uneventful.

September 15. The patient was discharged from the hospital, cured of typhoid fever.

Course of the Pregnancy, Labor and Puerperium.—On admission in July, 1912, the patient said that her last menstrual period was in the latter part of February, 1912; accordingly, she was about five months pregnant. The fundus of the uterus was one finger's breadth above the pubis.

August 22. Forty-eight days after admission the uterine souffle was distinct on the right side of the abdomen at the level of the umbilicus, but no fetal heart sounds were audible. The patient felt "life" only occasionally.

August 23. The fetal heart sounds were 136 beats per minute and were audible where the uterine souffle was heard on the previous day.

September 4. The fetal heart sounds were heard on the right side midway between the umbilicus and the anterior superior spine of the ilium. Thereafter the patient felt fetal movements daily.

September 15. The patient was discharged from the hospital, cured of typhoid fever.

October 14. Examination at the hospital showed the fetal heart sounds still audible on the right side. The fetus could readily be mapped out. The head had not yet engaged. Urinalysis was negative for evidences of nephritis. The diazo and the Widal reactions were negative.

November 7, midnight. When the patient was readmitted to Beth Israel Hospital in labor, vaginal examination showed the cervix dilated to four fingers.

November 8, 2 A. M. The birth of a full-term male baby with two coils of cord around the neck was followed in a few minutes by the birth of the placenta. The perineum was intact. Sterile flasks, culture media, etc., were in readiness for cultures, for the collection of blood from the placenta and cord, and for the taking of blood for Widals from the mother and child. The placenta and cord were afterward sent to the pathological laboratory for microscopical examination.

November 19. The puerperium was uneventful and the patient was able to go home.

Bacteriological and Serological Reports (12).

1. During the course of the typhoid fever.
   July 6. Widal positive 1:20 and 1:40.

August 1. Diazo reaction positive.

September 9. Urine and stool negative for typhoid bacilli.

2. During pregnancy after defervescence.

October 14. Widal negative 1:20 and 1:40.

3. During labor.

November 8.

	Blood from placenta	Blood from cord	Mother's finger	Child's toe	Placenta	Cord
Widal 1:20			Negative	Negative		
Widal 1:40			Negative	Negative		
Blood culture	Negative	Negative				
Bacteriological culture					Negative	Negative

4. During puerperium.

November 12. Bacteriological examination of the mother's and child's stool and urine was negative for typhoid bacilli. December 10. Blood from the mother's finger and child's toe was negative for Widal in dilutions of 1:20 and 1:40. A Widal reaction performed on the mother's milk was negative.

Pathological Examination of the Placenta and Cord(11).—Pathological examination of the placenta and cord showed them to be normal.

Observations Subsequent to Discharge.—December 10. When the mother reported at the hospital, the systolic murmur over the apex of the heart and pulmonary area had disappeared.

When every three or four weeks the mother returned to the hospital with the child for observation, both were found to be in excellent general condition. On three of these occasions the Widal performed on the blood of both the mother and child was negative. The mother appeared none the worse after her long illness and was able to do her housework. The child was well nourished, was gaining in weight and had normal stools. The patients were last seen on Feb. 3, 1914.

Summary and Conclusions.—1. In a woman thirty-one years of age typhoid fever developed during the fifth month of pregnancy.

2. The disease was moderately severe and complicated by intestinal hemorrhage and intercurrent relapse.

3. Passing unscathed through the grave dangers of toxemia and pyrexia, the child was normally born at full term.

4. The Widal was positive on the seventh day of the disease. On readmission to the hospital at the time of labor the Widal was negative in the mother as well as in the child immediately after delivery. On several occasions thereafter, when performed on the blood of

both patients, the Widal remained negative. The Widal on the mother's milk was negative. Cultures from the blood of the placenta and cord were negative. Attempts to culture sections of the placenta and cord resulted in no bacterial growth.

Other Reports from the Literature.—According to Foulkrod(5) the severity of the disease is greatly intensified by pregnancy up to the fourth month but mildly so after the sixth month.

Lynch in a comprehensive article on placental transmission(13), concludes that typhoid fever was more often seen in the first half of pregnancy and that it was most liable to interruption in the third month, usually in the second week of the disease. Miscarriage occurred in five out of the six cases recorded; the sixth subsequently gave birth to a living child.

The percentage of cases which terminate before full term varies from 83 per cent.(1) to 58 per cent.(14)(15).

Sacquin(2) describes 169 cases in detail. Of these, only fourteen or 8.4 per cent. went to full term; forty-five of the 169 or 21 per cent. were seven months pregnant, and thirty-one or 69 per cent. of these had premature labors; 124 of the 169 or 73 per cent. were pregnant less than seven months. A little more than half of the 124 had abortions and miscarriages. In the above case the patient continued her pregnancy to full term, with normal delivery and puerperium.

As to the agglutination reaction, in 26 cases occurring in the literature only 8 or 30.6 per cent. were found to give a positive reaction(16). This case showed a negative reaction in the mother and child. The question of the passage of the agglutinins from the mother to the child or their formation in the child is debatable. It is difficult in this case to judge whether the Widal reaction was ever positive in the fetus. Stäubli(17), in experiments with guinea-pigs, shows that the agglutinins may be passively transmitted. He also found that a placenta showing pathological changes could transmit to the fetus the agglutinins whether actively or passively acquired.

According to McCrae(18) the bacillus may pass from the mother to the child in utero, usually in cases of hemorrhagic lesions in the placenta. Preble and Clark(19) collected 19 cases in which the bacillus was isolated from the fetus. In the case recorded the placenta was normal and it is questionable whether the child had the disease.

In the treatment of pregnancy in typhoid fever, the danger to the mother should be considered as the indication for interference. According to Hicks and French(20) premature labor should be induced in the third week of the disease if a viable child is desired.

This period in typhoid fever is perhaps the most dangerous to the mother because of the serious complications that may arise independent of the pregnancy. Kelly(21) states that 56 per cent. of the children are saved. Because of the possibility of hemorrhage and perforation in the above case, induction of premature labor was at one time seriously considered and arrangements made for an emergency which never came. The patient was, however, allowed to continue her pregnancy as though it were uncomplicated by typhoid fever.

It is evident from the foregoing that the prognosis as to life of the mother depends upon the complications and sequelæ of the disease together with those resulting from interference with the pregnancy. Müller(22) notes that 21 per cent. was his maternal death rate. Sacquin(2) gives 16 per cent. and Curschman only 7.8 per cent.(23). The prognosis for the child depends upon the necessity or interruption of the pregnancy and in some instances on the extent of the mental deficiency from the febrile condition as mentioned by Corbin(24).

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