THE OCCURRENCE OF EPIDEMIC INFLUENZA IN PREGNANCY.*

BY

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THE recent epidemic of influenza which swept over this country, with its attendant paralysis of our national life and industries, its hampering effect on the development of our military system and the fact that to some extent, as least, we were unable to properly cope with the same, must be regarded in the light of a catastrophe, especially if we consider that its toll in lives alone almost equaled that of our fatalities in the Great War. Affecting indiscriminately all classes of our population, especially young adults, it is but natural that many women in the pregnant state should have been included among its victims.

A pregnant woman meets with universal sympathy because of her condition and if any additional burdens must be borne, such as an epidemic of this kind, from which escape is well-nigh impossible, our interest and sympathy become even deeper and more pronounced. We must thoughtfully consider what can be done to alleviate such

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serious complicating illness or prevent it, if possible. And what, moreover, shall be our attitude toward the unborn child?

In any widespread epidemic, such as that which has just swept over the country, the element of hysteria is likely to fasten itself upon people and more especially upon the pregnant woman. She is usually more or less nervous about herself during this period and this feeling is only added to when she reads and hears about the terrible complications that may attend an illness that at first merely seems like an ordinary cold in the head. To some extent this feeling has also seized upon the profession and we find various directions given by physicians to their patients, from the injection of a prophylactic vaccine to the production of abortion. Our recent influenza epidemic is now fortunately a thing of the past and only isolated cases are still reported. In looking back over this period we may well inquire into the salient features that present themselves to an observer which might be of assistance in future years if similar plagues come upon us. Have we learned enough from the incidence of influenza complicating pregnancy to warrant us in advising vaccine as a preventative or curative procedure, or if the influenza goes on to the production of pneumonia are we warranted by our experiences to put an end to a pregnancy? It is difficult to formulate specific conclusions and an individual observer can do nothing more than present what in his opinion is a safe method of procedure. It is possible that a rational and conservative attitude on the part of one physician may be entirely negatived by the observations of another, so that it may be difficult to follow even a middle course. In presenting herewith my own observations for what they may be worth to others, I simply do so with the admission that they are limited to my personal experiences, that I have not drawn upon the observations of others, and being personal, such observations must necessarily be limited in scope.

To begin with, I have observed considerable differences in the course of the recent epidemic of influenza in different classes of the population. Among a series of private patients, who were previously in good health and well nourished, it was found that the symptom-complex, which has been described as influenza, did not pursue any different course in the pregnant woman from that in the nonpregnant woman. Among my patients I came in contact with only twelve cases of undoubted influenza, all of these being undelivered with the exception of one. The latter developed a rather severe pneumonia during the third week. Two of the antepartum cases

also contracted pneumonia. Both of these made complete recoveries, but attention may be directed to some of the features of the individual cases.

In one, Mrs. S., pregnant seven and one-half months, an initial attack of what was diagnosed as a cold in the head was succeeded in a few days by a chill with rise of temperature and signs of beginning pulmonary consolidation. The patient was considerably prostrated for several days, with a temperature not over 103° F., but rather marked dyspnea and cough. Defervescence took place at the end of the first week by crisis, the temperature dropping to 96° F., with pulse varying from 70 to 80 and considerable prostration. From all this the patient, however, made a good recovery notwithstanding the fact that the laboratory examination of her blood showed pneumococcus (type iii), with a bad prognosis from the serologist. The patient lost considerably in weight and strength and labor was induced about a week before the calculated term and about three weeks after the pneumonia process subsided as some doubt was entertained by the writer of the ability of the patient to expel the moderately large child through a pelvis of normal or slightly less than normal proportions. The labor was marked by considerable delay in the first stage and very little expulsive effort during the second. The head in a posterior position failed to rotate and was delivered as such by forceps with good results. In order to avoid respiratory irritation, chloroform was administered for the operation and no difficulty experienced. The patient bled very freely but made a good recovery and no symptoms have appeared referable to her recent severe pulmonary involvement.

Another patient, Mrs. D., primipara, pregnant about seven months, after a course marked by cough, nasal discharges, severe backache, etc., developed a well-marked pneumonia involving the entire left lung after she had apparently recovered from the previous attack. This pneumonia ran its course in a week and defervescence also took place by crisis. Complete consolidation had resulted but resolution seemed to take place very rapidly, although there was much complaint of local pain. The patient made an uninterrupted recovery, the lung clearing up satisfactorily in af ew days. The postpartum case seemed to run the most severe course but also made a good recovery, although it was necessary for her to stop nursing.

The question of prophylaxis against influenza infection was brought forward by the importunities of many of my patients who had read or heard of these procedures. I felt that I could not advise them satisfactorily and consultation with both medical men and serologists failed to convince me that the procedure was either necessary or desirable. This may seem an iconoclastic attitude to assume, but in view of the scant knowledge we possess regarding the causative germ of epidemic influenza, I did not feel it proper to subject pregnant women to a procedure, the ultimate effects of which were doubt-

ful at the best and which, among other things, might lead to a sense of false security. I considered it more important to advise pregnant patients to avoid crowds, to isolate themselves immediately if evidences of nasal discharges, cough, etc., appeared, to wear face masks if there were any other cases of influenza in the immediate family and to keep the mouth as clean as possible by frequent rinsing with a mild antiseptic solution.

Regarding the influence of the influenzal infection on the course of a pregnancy, it is not possible to make any definite statement. Among my private cases there was only one case of threatened abortion in a patient, Mrs. F., a para-ii, who was about four months' pregnant. She developed a typical influenzal attack but without any complicating pneumonia, and bled slightly for almost a week. Rest in bed and the administration of small doses of codeine in addition to the treatment directed to the influenza itself were all that were employed and the pregnancy went on. In this patient, however, there was a history of irregular bleeding in the early months of her first pregnancy, so that the influenza cannot be accepted definitely as a factor. Undoubtedly a great many other women developed influenza and yet in neither private or hospital practice did I notice any additional cases of this kind except in one hospital patient with pneumonia in whom abortion at the fourth month took place.

In one patient a complicating feature developed which might be ascribed to the influenza. This patient, Mrs. S., a para-iii, seen in consultation, was about five months' pregnant. She had a well-developed attack of influenza several weeks previously from which she apparently made a good recovery but the urine showed the continuous presence of albumin with granular and hyaline casts. The patient complained of severe headache but there was no edema. Under the usual treatment for this condition her symptoms subsided and she is going on with her pregnancy. I think it is fair in this instance to attribute the nephritis to the infectious disease, as nothing of this kind had been observed in previous pregnancies. There were no signs of abortion in this case.

Taking up next the hospital cases we find a somewhat more serious picture. During a period extending roughly from the end of September to the end of November, there were twenty-one cases of undoubted pneumonia admitted to the wards of the Lying-In Hospital. Four additional cases admitted to the private pavilion in the service of various members of the staff, are not included. Among the twenty-one ward cases there were fifteen deaths and six recoveries. The salient features of these cases are presented in the appended summary. Four were admitted after being delivered at home by our Outdoor Service, the others were regular applicants or were referred by their physicians. These women all came, as

far as I am aware from tenement homes and were all seriously ill, in many instances moribund. The majority seemed hopeless and nothing could be done for them except to make them more comfortable. All were at or near term, with the exception of two at the seventh month and one each at the fourth, fifth and sixth month.

In addition to the cases with complicating pneumonia, a considerable number of women in the wards had symptoms of the prevailing illness, marked by nasal discharges, headaches, cough, moderate elevation of temperature. The cough was the most troublesome symptom, although in none of these milder cases were any definite physical signs present in the chest aside from a few bronchial râles. The women in labor who entered with the disease, were delivered soon after admission. They were isolated in a corner of the ward and the bed curtains drawn but none of the milder cases developed pneumonia, nor did they apparently infect any of the other women, as no cases whatever developed in the wards among the waiting women. This seemed strange as a considerable number of undoubted influenza cases developed among the hospital personnel, including doctors, nurses and maids.

In an attempt to obtain a definite picture of the above group of cases the impression was given of an illness of extreme severity in which the chances of recovery were doubtful in almost every case. Comparing them, however, with nonpregnant cases I do not believe that we can assume any marked distinctions. Pneumonia in a pregnant woman is always more or less of a serious complication, but our cases at least, did not show that relief from the pregnancy contributed to their well-being. One is guided more or less by impressions received from the observations of such a series of cases and personally I do not believe that in a single instance would any better outcome have resulted had steps been taken routinely to bring on abortion or labor in any of these cases. In the patient in whom an abortion resulted, this was complete and easy and in those in whom natural labor came on, interference was only necessary in one case, where a medium forceps operation was done as soon as the patient was fully dilated. It seemed that even here no harm would have resulted in waiting a little longer and one might well say that labor in these severe pneumonias, as in eclampsia, often surprises one by its rapidity and ease. As far as the prognosis in the baby is concerned I do not believe that we should sacrifice the chances of the mother in any way by the induction of labor or the employment of operative delivery in order to save the child. For we find that in this brief series many of the babies which lived were undoubtedly below

par. Two women died undelivered and we would have been prepared to have done a postmortem Cesarean section in one of the cases but no fetal heart sounds had been observed for over twenty-four hours previously.

As for the treatment of these cases of pneumonia complicating pregnancy, no diversion need be considered from the usual routine. These women seem to do best and are most comfortable if plenty of fresh air is supplied. The edema of the lungs is a marked feature and we employed the ordinarily recommended methods without however much result except from the counterirritation. One of the most alarming symptoms is the deep cyanosis, which often comes on suddenly and is continuous. In those women in whom it appeared the outcome was usually a fatal one.

Although, as I have already stated, my observations are necessarily limited to personal experiences with a comparatively small number of cases, yet I cannot subscribe to the statement that pregnant women are more liable to contract influenzal pneumonia than the nonpregnant. Young adults of both sexes seem equally prone to the severer types of the infection and while the incidence of pneumonia in pregnancy is undoubtedly a serious matter, it has not been shown that in any given number of young married women the pregnant are more frequently affected than the nonpregnant. This seems borne out by the fact that among the large number of applicants for admission to the Lying-In Hospital, who report at regular intervals for antepartum examinations, only a comparatively small number of influenzal pneumonias developed. Unquestionably the milder types of the disease occurred, but they did not get sick enough to come to the Hospital nor apparently did they abort, or we should have been made aware of that fact.

With reference to the attitude to be observed in the presence of the influenzal infection in pregnancy, I would unhesitatingly answer, treat the influenza and let the pregnancy take care of itself. Where pneumonia appears as a complicating factor I would still adhere to the above opinion and in neither case resort to the induction of abortion or labor unless some other circumstance called for the same. It seems to me that a patient needs all her reserve strength to combat the toxemia from the influenza or pulmonary infection and if her life is at stake it should not be jeopardized by adding the extra burden of an induced labor.

SUMMARY OF CASES OF INFLUENZAL PNEUMONIA COMPLICATING PREGNANCY.

Lying-In Hospital Series.

CASE I.—Mrs. J. C. (C. N. 41806), aged twenty-three, para-i, three and one-half months' gestation; admitted October 23, 1918, sick with "cold" for one week previously. Admitted in fair condition with signs of lobar pneumonia. Aborted spontaneously. Ran continued high temperature and pulse with moderate cyanosis and a great deal of coughing with profuse expectoration. Gradual resolution took place. Blood culture sterile. Sputum showed no tubercle bacilli but patient seemed to have the disease. Discharged and referred to tuberculosis clinic.

CASE II.—Mrs. G. R. (A. N. 65246), aged twenty-three, para-iii, six months pregnant. Admitted September 24th in fair general condition with a history of a "cold" for a week previous. A lobar pneumonia involving the upper left lobe only. Temperature 101°, pulse 120. Patient improved rapidly, temperature remaining down after the second day. Sputum negative for tubercle bacilli. Patient discharged in good condition undelivered.

CASE III.—Mrs. G. C. (C. N. 41914), aged thirty-two, para-ii, eighth month gestation. Admitted October 30th in active labor which ended spontaneously. She had been ill for several days with a "cold" and became worse on the second day after labor with marked delirium, dyspnea and signs of a well-developed lobar pneumonia. Highest temperature 103° on the third day which continued for a week. Blood culture sterile. Patient made complete recovery and was discharged with living child.

CASE IV.—Mrs. F. H. (C. N. 41713), aged twenty-six, para-ii, at term. Admitted October 12th in fair condition with bronchopneumonia following "cold." Temperature 103°, pulse 120. Went into labor spontaneously and was delivered October 13th. Improved steadily after the seventh day postpartum and was discharged with her baby on the fifteenth day.

CASE V.—Mrs. M. K. (C. N. 41831), aged twenty-four, para-iii, at term. Admitted October 26th in poor condition; transferred from Outdoor Department one hour postpartum. Temperature 105°, well-marked lobar pneumonia. Rapid improvement after the third day. Discharged with living child, completely recovered.

CASE VI.—Mrs. C. G. (A. N. 65440), aged twenty-one, para-i, eighth month. Admitted October 12th in fair condition with lobar pneumonia involving the left lower lobe. Had been ill previously for a week with a "cold." Improved rapidly and was discharged undelivered on November 1st.

CASE VII.—Mrs. A. L. (A. N. 65402), aged ——, para-ii, at term. Admitted October 8th, eight hours postpartum in fair general condition. Moderately cyanotic and dyspneic; grew rapidly worse and died three days later. Child lived.

CASE VIII.—Mrs. F. D. (A. N. 65446), aged twenty-four, para-ii,

eighth month. Admitted October 13th, in poor condition, having been sick for ten days. Well-marked bronchopneumonia present. Deep cyanosis, continued high temperature with marked delirium and rapidly developing edema of lungs. Died October 13th undelivered. Fetal heart sounds absent on admission.

CASE IX.—Mrs. J. L. (C. N. 41768), aged twenty-four, para-ii, at term. Admitted October 19th in labor with a history of having been sick for one week with grip. Normal spontaneous labor. Patient grew rapidly worse; cyanotic, delirium and stupor. Died October 23d. Child lived one day. Autopsy showed cerebral hemorrhage, atelectasis, staphylococcus septicemia.

CASE X.—Mrs. K. M. (C. N. 41820), aged thirty, para-v, at term. Admitted October 31st, seven days postpartum with bronchopneumonia. Had normal delivery and became sick three days later. Developed edema of the lungs November 3d and died November 5th. Sputum showed incapsulated diplococcus but no tubercle bacillus. Baby lived.

CASE XI.—Mrs. K. L. (C. N. 41813), aged thirty-three, para-v, seventh month. Admitted October 24th in labor. Was in fair condition with a lobar pneumonia following a week's illness. Spnotaneous breech delivery of a premature baby weighed 1380 grams, which died three hours postpartum. Slight improvement after labor and up to October 29th when she developed pleurisy with effusion. Eight hundred cubic centimeters of purulent fluid aspirated. Grew rapidly worse and died October 31st.

CASE XII.—Mrs. L. C. (C. N. 41702), aged twenty-two, para-ii, at term. Admitted October 11th with temperature of 100°. Moderate cough and dyspnea. Spontaneous labor October 13th completed by median forceps as patient had been previously Cesareanized in another hospital. Was in considerable shock and became rapidly weaker after delivery. Expired about eight hours later. Baby lived.

CASE XIII.—Mrs. A. I. (C. N. 41559), aged twenty-five, para-ii, at term. Admitted September 27th from Outdoor Department, two and one-half hours postpartum. Condition poor, deeply cyanosed and dyspneic with edema of the lungs. Grew rapidly worse and died September 28th with well-marked evidences of double lobar pneumonia. Baby lived.

CASE XIV.—Mrs. K. K. (C. N. 41851), aged nineteen, para-ii, seventh month. Admitted October 27th in poor condition with well-developed lobar pneumonia. Course marked by continued high temperature, no recessions. Blood culture sterile. Died October 30th. Baby lived six hours, premature, weighed 1180 grams.

CASE XV.—Mrs. M. A. (C. N. 41811), aged twenty-nine, para-ii, eighth month. Admitted October 24th with post-influenzal pneumonia. Delivered spontaneously next day. General condition improved but two days later she developed cough, dyspnea, cyanosis. The edema of the lungs responded fairly well to treatment but she suddenly grew worse four days later and died October 31st. Blood culture showed encapsulated diplococci, and streptococcus hemolyticus. Baby lived.

CASE XVI.—Mrs. L. I. (A. N. 65405), aged twenty-seven, para-ii, seventh month. Admitted October 8th in poor condition, cyanotic and dyspneic with double lobar pneumonia. Developed edema of lungs next day and grew rapidly worse and died undelivered October 9th.

CASE XVII.—Mrs. E. L. (C. N. 41686), aged twenty-two, para-ii, at term. Admitted October 12th, six hours postpartum from the Outdoor Department after a normal labor. General condition poor, well-developed bronchopneumonia following a week's illness. Grew rapidly worse; marked dyspnea and cyanosis and edema of lungs. Died October 16th. Baby lived.

CASE XVIII.—Mrs. S. D. (C. N. 41540), aged twenty-two, para-i, fifth month. Admitted September 24th in very poor condition with double lobar pneumonia and nephritis. Patient immediately delivered by vaginal Cesarean section of stillborn fetus. Postoperative condition poor, delirious, cyanotic and dyspneic. Died next day.

CASE XIX.—Mrs. J. D. (C. N. 41735), aged thirty-two, para-iv, fifth month. Admitted October 17th with a diagnosis of threatened eclampsia. In moribund condition, deeply cyanotic, dyspneic with well-developed bronchopneumonia following influenza present for ten days previously. Aborted spontaneously of stillborn fetus. Died six hours after abortion without having recovered consciousness.

CASE XX.—Mrs. R. R. (C. N. 41604), aged twenty-four, para-ii, at term. Admitted October 4th in fair condition with generalized bronchitis; temperature 104°, moderately sick. Left lobar pneumonia. Spontaneous delivery followed by slight improvement but soon became more cyanotic and delirious. Died October 8th. Child lived.

CASE XXI.—Mrs. L. S. (C. N. 42118), aged twenty-three, para-i, at term. Admitted November 20th in poor condition with well-developed bronchopneumonia following five days' illness. Went into labor spontaneously and was delivered by low forceps of a macerated full-term baby. Grew rapidly worse and died eight hours postpartum.

TABULATED CASES.

Total number of hospital cases studied..... 21
Parity: One, 5; two, 11; three, 2; four, 1; five, 2.
Ages: Nineteen, 1; twenty-one, 1; twenty-two, 3; twenty-three, 3; twenty-four, 4; twenty-five, 1; twenty-six, 1; twenty-seven, 1; twenty-nine, 1; thirty, 1; thirty-two, 2; thirty-three, 1; ?, 1.
Month of gestation: Three, 1; five, 2; six, 1; seven, 2; eight, 4; nine, 11.
Outcome for mother:
Recovered..... 6
After labor..... 3
After abortion..... 1
Discharged undelivered..... 2

Died	15
After labor	11
After abortion	2
Undelivered	2
Outcome for child:	
Born alive and regularly discharged	10
Born alive and died postpartum	3
Stillborn viable children	1
Abortions, before fifth month	3
Undelivered:	
Mother discharged well	2
Mother died	2

23 EAST NINETY-THIRD STREET.