HEART DISEASE IN PREGNANCY AND THE PUERPERIUM.*

Report of Cases.

BY
J. F. MORAN, M. D.,
Washington, D. C.

Heart disease though a comparatively infrequent complication of pregnancy and the puerperium is at the same time an exceedingly dangerous one, and, in many instances, fully as grave as placenta previa or eclampsia. Yet, while the latter have been exhaustively treated in text-books and elsewhere, cardiac disease in pregnancy has by no means received the careful study and consideration which its importance deserves. For this reason, and, the further fact, that many cases of compensated cardiac lesions go through pregnancy and labor undetected, the statistical reports as to its frequency and mortality vary within wide limits and are, therefore, of only relative value.

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For instance, Fellner (Peterson's Obstetrics, p. 358), who has made a most careful study of the relation of heart lesions to gestation, believes that only in about 14 per cent. of the cases is the presence of heart failure recognized, while in probably 86 per cent. this complication is overlooked, because the cardiac symptoms do not become manifest. Leyden claims that about 40 per cent. of women with heart lesions meet their death in connection with childbirth and, according to Cameron, hospital statistics show that organic heart disease exists in pregnancy in 1 to 2 per cent.

Clinical experience demonstrates that the cardiopaths are not usually sterile, that they are not especially liable to abort, and that the majority of them may bear living children, particularly in their first pregnancy.

The previously accepted teaching of the French school that the heart undergoes hypertrophy during pregnancy was attacked by Gerhardt in 1862, and his findings were subsequently supported by Stengel, Stanton, and others. These authorities showed that the apparent hypertrophy was in reality due to the upward and outward displacement of the heart because of the upward arching of the diaphragm by the enlarging uterus, and, further, by the retraction of the lung, whereby the larger part of the heart surface is brought in proximity to the chest wall.

The writer believes that it is quite possible that varying degrees of temporary dilatation of the heart takes place in pregnancy similar to that which occurs after great exertion, so that the cardiac mechanism is capable of maintaining the circulatory equilibrium without undergoing appreciable hypertrophy or increasing markedly the blood pressure.

Normal pregnancy does not predispose to the development of inflammatory or degenerative changes in the heart muscle or endometrium, nor is the pulse rate or tension markedly altered. Systolic heart murmurs heard at times in pregnant women are not due to organic lesions, but are identical with those observed in chlorotic and anemic patients, or produced by slight compression of the heart. Anomalies in pulse rate, as arythmia or tachycardia, are as a rule only nervous manifestations. Bearing on this point I have recently delivered two women who have inorganic heart murmurs with disturbance of rhythm; both are of very nervous temperaments and anemic.

Etiology.—Heart disease may have its inception before, or during, pregnancy, or it may not occur until the puerperium.

Where it originates before pregnancy there is usually an antecedent history of rheumatism, chorea, tuberculosis, syphilis, or a specific fever; if it develops during gestation, it may be due to one of the afore-mentioned causes, or be the result of a toxemia, while puerperal endocarditis is almost invariably of septic origin.

Diagnosis.—The diagnosis of heart disease during pregnancy and the puerperium is made by the typical physical signs, but care must be exercised not to mistake a hemic murmur, with increased cardiac dullness for an organic lesion, and it should be remembered that some of the signs of heart disease may be simulated in a neurotic patient.

Prognosis.—While the prognosis of heart disease complicating pregnancy is always grave for the mother and child, the result, in a given case, will depend upon the valves affected, the amount of compensation, the condition of the heart muscle, and the general state of the patient.

The increasing demands upon nutrition, circulation and elimination incident to pregnancy, may disturb a well compensated lesion, and an incompensated one at the time of impregnation will almost certainly lead to grave circulatory embarrassment. The injurious effect, however, is more dependent upon the condition of the heart muscle than upon the particular lesion. If there is no myocarditis and the compensation is good, the patient may pass through the pregnancy and labor without any untoward event. Mitral lesions are more frequent than those of the aortic valves, while mitral stenosis and aortic insufficiency are generally more serious. The combined existence of two or more lesions increases the gravity, and the condition of the kidneys, liver and lungs will have an important bearing upon the outcome.

It is estimated that the mortality of mitral stenosis complicating pregnancy is over 50 per cent.; aortic lesions give a mortality of 23 per cent.; mitral insufficiency is credited with 13 per cent., while in complex lesions a mortality of 50 per cent. is a conservative estimate. (Am. Text-book of Obstet., p. 238.)

Organic heart disease, by crippling the placental circulation and causing insufficient oxidation, favors the development of apoplexies in the early months of gestation and may produce abortion, while asphyxia, often fatal to mother and child, may occur toward the end of pregnancy. Such cases are particularly dangerous during the expulsive stage, on account of the efforts made by the patient, and the consequent overwork of the en-

feebled cardiac muscle. After delivery, there is an increased risk of postpartum hemorrhage and edema of the lungs. During the puerperium sudden death may take place from syncope or embolism. If this danger be happily averted, the woman, owing to diminished resistance, is still liable to acute endocarditis, should puerperal infection occur. It is readily seen, then, that pregnancy and parturition are dangerous to the cardiopath. The nature of the cardiac lesion has considerable influence upon the clinical phenomena observed; mitral insufficiency predisposes to edema and asystole; aortic insufficiency to syncope and epistaxis; mitral stenosis to cerebral embolism, hemiplegia, and postpartum hemorrhage.

I have had seven cases of heart disease complicating pregnancy and the puerperium, five of which were seen in consultation. One had good compensation; another, fair; in four it was bad, and in one there was acute dilatation of the heart in a case of typhoid fever complicating the puerperium. Two of the mothers died; all of the infants lived.

CASE I.—*Mitral regurgitation.* Compensation fair. Mrs. O. D., age thirty; primipara; confined May 12, 1896. Labor normal, lasting about twelve hours; L. O. A. About one-half hour after expulsion of the placenta, patient complained of difficulty of breathing, the pulse quickened, edema of the lungs rapidly supervened, and patient succumbed in spite of vigorous stimulations three hours after delivery. Child living.

This case was under observation for several months before her confinement. There was a marked systolic murmur at the apex and the left border of the heart extended about 4 inches beyond the midsternal line. There was edema of the extremities and dyspnea on exertion. Urinalysis, negative.

CASE II.—*Mitral stenosis, regurgitation and dilatation.* Mrs. K., age twenty-seven; III-para. Seen in consultation with Dr. G. W. Boyd. Admitted to Columbia Hospital in labor, February 12, 1902, 10.30 A. M. Confined 11.30 A. M. This patient entered the hospital in labor; had to be delivered in a semirecumbent posture on account of orthopnea. There were double, apex murmurs, marked hypertrophy and dilatation. Urine contained albumin and casts, hyaline and granular.

Previous pregnancies and labors normal. Present labor, four and one-half hours' duration and easy; L. O. A.; child living. One hour after delivery pulse 104, and at 2 o'clock 115, and breathing labored. In spite of vigorous stimulation the pulse quickened to 150, edema of the lungs set in and the patient died at 5.15 P. M.

CASE III.—*Mitral regurgitation and aortic stenosis.* Compensation good. Mrs. R., age thirty-three; primipara. Confined

May 25, 1904. Labor normal and six hours long. R. O. A. Puerperium normal.

The patient was seen in consultation with Dr. Reisinger, who furnished the following history. Had pneumonia twenty years ago. Heart lesions detected several years before pregnancy; compensation good. Occasional attacks of syncope, and dyspnea on exertion. Very anemic. Urinalysis negative. The cardiac condition continued about same for three months after delivery, then became worse, all symptoms becoming more aggravated. Patient is now practically an invalid.

CASE IV.—*Mitral stenosis.* Compensation excellent. Mrs. M., age thirty-one; primipara. Confined July 22, 1900. Labor normal and fourteen hours in duration. Puerperium normal.

Patient is intensely nervous, anemic, and suffers from occasional rheumatic pains. About seven months after her confinement she had an attack of syncope, since which time they have recurred at intervals. Two years ago she had pneumonia attended with acute dilatation of the heart and mitral insufficiency. Present state of health is fair.

CASE V.—*Mitral insufficiency.* Compensation, very poor. Mrs. S., age thirty-five; II-para. Confined August 1, 1908. Labor normal and twenty-four hours in duration. Puerperium normal.

The patient was seen in consultation with Dr. G. W. Boyd, who furnished the following history: Had nephritis in childhood and typhoid fever eight years ago. First child born twelve years ago, labor normal but puerperium was complicated by mastitis. Had infection following an abortion five years ago. First observed the heart lesion in the third month of present pregnancy. From this time to the end of gestation had dyspnea on slight exertion, was unable to lie down or sleep, and there was marked edema of the vulva and the lower extremities. Urinalysis showed albumin, percentage not ascertained. Examination: Loud systolic murmur at apex, heart enlarged (dilated) and left border extends 4 inches beyond the midsternal line. Râles in lower lobes of the lungs posteriorly. Breathing labored and shallow. Pulse rapid and weak. Treatment: Rest, strychnia sulphate, infusion of digitalis, etc.

Labor tedious, otherwise uneventful. Child living and weighed 8 pounds. No anesthesia. Present condition, improved.

CASE VI.—*Mitral insufficiency and dilatation.* Compensation poor. Mrs. R., age thirty-eight; III-gravida. Seen in consultation with Dr. Kaveney, May 19, 1908. Examination: Mitral systolic murmur; heart dilated and apex displaced to the left. Edema of the lower lobes of both lungs; breathing difficult. Treatment: Advised that patient be moved to hospital, be kept in bed, diet be restricted to milk, and infusion of digitalis be given. Patient improved greatly and passed through the labor

a month later comparatively easy. No anesthetic given, but a hypodermic of strychnia was administered at the end of second stage of labor to relieve the embarrassed respiration. Infant living and weighed 6 1/2 pounds. Puerperium normal. Present state of health, good.

CASE VII.—Mrs. K., age twenty-six; primipara. Confined October 15, 1908. Labor normal. Seen in consultation with Dr. Kelley, two days after delivery. The patient was then in the prodromal period of typhoid fever. The course of the disease was stormy, complicated with acute dilatation of the heart and phlebitis of both lower extremities. The temperature reached normal for the first time on the thirtieth day, and then continued in a zigzag manner until the end of the seventh week after delivery. The phlebitis became manifest during the third week and the cardiac dilatation occurred soon afterward. The patient's condition was extremely critical for some days, but the alarming symptoms gradually yielded to the free administration of the fluid extract of digitalis, strychnia, and stimulants. The convalescence was protracted and patient has never fully recovered.

The management of the cardiopath will depend upon the degree of compensation, character and extent of the lesion, and general condition of the patient. No matter how well balanced the heart lesion may be the case should be carefully watched throughout the pregnancy, labor, and the puerperium. If compensation is completely established, our efforts should be directed toward maintaining it by safeguarding the patient against excitement, overexertion, excessive eating and exposure to cold. The skin should be kept active by a daily tepid bath. Hot baths should be interdicted for fear of producing syncope. The bowels and kidneys should be carefully regulated to relieve the circulatory system and to avert a possible toxemia. Pulmonary and renal congestion are among the most dangerous complications of heart disease, and should be guarded against by avoiding sudden chilling of the body and by the wearing of proper clothing. Moderate exercise in the open air is helpful, and the patient should rest in the recumbent posture at frequent intervals during the day. Should compensation be disturbed, as evidenced by dyspnea, cyanosis, edema of the lungs and extremities, absolute rest in bed should be enjoined, the diet restricted and heart stimulants given to meet the exigencies of the case. The judicious use of digitalis, strophanthus, nitroglycerin, nitrite of amyl, strychnia and morphia together with rest, will often restore the compensation, overcome the menacing symptoms and permit the patient to be carried safely to term or at

least to the period of viability. If, in spite of these measures, the threatening signs persist, the pregnancy should be terminated. While premature delivery affords the advantage of a small child, it must not be forgotten that it is often fraught with great danger.

Comparatively few patients succumb during pregnancy, the majority die during or after confinement. It is important then that the character of the lesion and the amount of compensation be recognized, so as to be prepared to meet the emergencies as they arise. If the compensation is adequate the conduct of the labor should be the same as in normal cases, except that it might be advisable to give a hypodermic of morphia during the expulsive stage for its quieting effect. When the circulatory equilibrium is disturbed, digitalis should be given hypodermically and its effect sustained by the administration of strychnia in the same manner. If the blood pressure is high nitroglycerin will be indicated and if this measure does not relieve the cardiac embarrassment and heart failure threatens, venesection should be performed. The abstraction of 500 to 1,000 c.c. of blood together with the careful use of digitalis and strychnia will relieve the engorged lung and overburdened heart. Venesection is particularly indicated in mitral stenosis with ruptured compensation but is serviceable in all valvular lesions under like difficulty. It may become necessary to assist the delivery by dilation of the cervix, forceps, version or a cutting operation. Whichever mode of intervention is elected, it should be carefully executed to avoid shock and sudden lowering of the blood pressure. Immediately after the delivery the latter danger should be further guarded against by placing a bag of sand on the abdomen. The placenta should be allowed to be expelled spontaneously, and no friction or kneading of the uterus practised, but free bleeding favored to relieve the disturbed circulation. Ergot must not be given. Nursing the infant should be prohibited as the patients are usually anemic. Medical and hygienic measures must be employed during the puerperium.

Regarding the advisability of marriage by the cardiopath, the writer is firmly opposed to it, for no matter how well compensated the lesion may be, pregnancy always exerts a baneful influence, exposes the patient to the danger of toxemia and dystocia, while if she passes safely through childbirth she may be left with a crippled heart for the remainder of her life. The writer is, therefore, in thorough accord with the dictum of Peter,

"no marriage for the unmarried, no pregnancy for the married, and no nursing for the confined."

The infrequency of heart disease during pregnancy, like toxemia and placenta previa, emphasizes the importance of a thorough physical examination of the patient and constant supervision during the gestation in order that the complication may be promptly detected and such measures undertaken in the interest of the mother and infant as the exigencies of the case may determine.

2426 Pennsylvania Avenue. N. W.