Original Articles.

THE TREATMENT OF PREGNANCY COMPLICATED BY HEART DISEASE.¹

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IN reporting the following case I realize that I may lay myself open to severe criticism for hasty action, but I hope to prove that the course adopted was chosen only after full consideration had shown it to be the best method of meeting a complication of pregnancy, whose gravity is universally recognized, but whose treatment seems to have been most inadequately dealt with in the text-books.

The patient was sent to me by Dr. George Haven, in 1889, when she was twenty-one years old, for the relief of cardiac symptoms of over three years' duration. There was no rheumatic history, but she had had both scarlatina and diphtheria as a child. There was little œdema of the feet, considerable dyspnoea on exertion, cough and slight hæmoptysis. The cardiac dulness extended about one finger's breadth to right of sternum, while the apex was in the fifth interspace just within the mammillary line, where a loud presystolic thrill could be heard and felt. She improved greatly under treatment, and after a few weeks discontinued her visits; so that I saw nothing more of her until November, 1892, when she again appeared for advice.

During the intervening three years she had been fairly well; but on several occasions after exercise she had had "fainting spells," which were preceded by severe cardiac pain. During the early part of the summer she had overexerted herself in preparation for her marriage, which took place in August. Her catamenia, which in July were attended by an excessive flow, occurred last on August 27th, since when she has been gradually losing ground, cough and dyspnoea having slowly increased. Hæmoptysis now frequently occurred, vomiting had become very troublesome, and she was very anæmic. Always nervous and somewhat hysterical, her condition had become greatly aggravated by the recent death of a friend during labor, from some cardiac complication, and she was haunted night and day by fear of a similar fate.

The lateral area of cardiac dulness had somewhat extended, as compared with the last examination; and in addition to the presystolic, a short systolic murmur was at times heard a little to the left of the apex beat. Except for œdema of both bases, the lungs were normal, and there was no swelling of the extremities. The urine had a specific gravity of 1.022 and contained a very slight trace of albumen. The pulse was regular but very small and easily compressed. While at rest its rate was only 78, but on the slightest exertion it rose to over 100. Dyspnoea was so great that she spoke only in disjointed phrases, pausing after every few words to catch her breath.

After a month's treatment by rest in bed, a restricted diet, digitalis and tonics, her condition became somewhat better, vomiting grew less frequent, and the pulmonary œdema cleared up; but as the dyspnoea improved but slightly, and the pulse made no gain in strength, I asked Dr. Haven to see her with me.

After a thorough discussion of the case, it was de-

cided to induce abortion; and on December 12th Dr. Haven dilated the cervix and packed the womb with iodoform gauze, this method being chosen in preference to an immediate evacuation as, with her extremely weak pulse, we feared the effects of etherization on the heart. Two days later the packing was removed, and a four months' foetus found in the vagina, the discomfort of the patient having been very slight. Recovery was uneventful, but her later condition has been such as to confirm the wisdom of our action. She is able to come into town occasionally to report, but can walk only at a very slow pace, and has since had several attacks of pulmonary œdema, in which her condition was critical.

To briefly recapitulate, the problem which confronted us was this: a patient with a double mitral lesion, between three and four months pregnant, who has had for several years alarming symptoms of failure of compensation, and in whom the slightest exertion, after a month's careful treatment, upsets the cardiac balance, is called upon, after passing through a further period of five months, during which increased demands are physiologically made on the heart, to meet the tremendous muscular strain of parturition; What advice should be given her? Or rather, to put the question in more general terms, What advice should be given to any pregnant woman with heart disease? Should she be allowed to proceed toward term, her strength being carefully supported and her progress watched with the possibility always in view of terminating pregnancy if her condition becomes desperate, or should she be at once delivered? Mortality statistics drawn from published cases make the outlook for these patients very bad when nature is allowed to take its course; for Porak,² out of 92 cases, found a death-rate of 38.09 per cent.; and Remy,³ out of 118, found one of 33.8 per cent. Of 77 cases collected by Wessner, 38 died, or 37 per cent. As all these series contain a number of identical cases, including McDonald's, a close similarity in the ratios was to be expected. More recently, Schlayer has reported 25 cases with 10 deaths, and Leyden 20 cases with 11 deaths. Of 30 cases which I have collected, not included in the above, 10 died. These percentages are based upon the number of women, not on the number of pregnancies, and are drawn almost entirely from severe cases, and may therefore approximate the average death-rate when serious symptoms have appeared. That they overestimate the actual mortality in the rank and file of cases is proved by every-day clinical experience, which shows that a large proportion of them pass through pregnancy and labor without the development of any evidence of serious cardiac embarrassment, or even at times of any signs whatever which lead the patient to suspect her disability.

One of these seems of sufficient interest to briefly report, not only on account of the number of pregnancies successfully weathered, but also because the ultimate fate of the children corroborates the grave prognosis which is given of their chances of surviving to adult life. The lesion was one of mitral regurgitation and stenosis. The patient, Mrs. C., thirty-two years old, had had three attacks of chorea as a child, but no distinct history of rheumatism. Between the ages of eighteen (when she was married) and twenty-seven she had six children, and one miscarriage at three

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² Thèse de Paris, 1880.

³ Thèse de Nancy, 1880.

months. The first pregnancy was uneventful, no trouble being suspected with her heart, but the second was attended by many stormy symptoms. She then received treatment for the cardiac condition and had much less difficulty with the next three, breathlessness and œdema, however, being more or less troublesome in each; but in the sixth her condition was such that the gravest apprehensions were felt as to her recovery, and the last few weeks were spent propped up in a chair. The labors were all rapid and easy, being terminated within an hour. The third child alone survives, the others all dying within a few months after birth.

For the sake of simplifying the original question cases of pregnancy complicated by heart-disease may be divided, with reference to treatment, into three classes, according to the severity of the symptoms: the first including all cases where they are wanting or slight, the second those in which they are so severe that the condition of the patient is desperate, and the third those which occupy a position midway between the two. The treatment of the two former may be dismissed in a few words. In the first, general supervision over the patient's manner of life, with the administration of tonics, will probably be all that is required to bring the case to a successful termination, or, at most, it may be necessary to hasten delivery should danger arise from too prolonged a labor. In the second class, the condition of the patient is already so critical that the induction of abortion may seem to give the only chance, though even here a timely venesection may change the aspect of the case, as it has done in several recorded instances, in one or two of which it was repeated several times. In the third class, to which the first case reported above belongs, as well as most of those in which the statistics previously given are based, where the patient still has several months before her, and symptoms have developed which either do not yield, or only partially so, to appropriate remedies, conditions are much more complex; and the question of treatment, whether by hopelessly waiting for nature to act, or by sacrificing the child in the interest of the mother, can only be decided in an individual case by the most careful study, both of her material circumstances and of her previous history and present physical condition, so far as they bear on the probability of an easy or difficult labor, and the preservation or loss of cardiac compensation. Many of these are fully discussed in text-books on heart disease and midwifery; so that only those need be mentioned in which the two conditions react upon each other, although the advantages of general good health and the ability to command every necessary attention may be referred to, as two such circumstances had considerable influence in determining us to induce abortion. These were the intense anxiety caused by the death of a friend under similar circumstances (which was alone exhausting her strength), and her suburban residence (which prevented prompt medical attendance should it have been suddenly demanded). The following points, however, deserve special consideration, namely, the site and gravity of the lesion, the time at which it was acquired, its stationary or progressive character, the period of the present pregnancy at which serious symptoms developed, and, in multiparæ, the history of previous pregnancies and labors.

As was to be expected when dealing with a class of patients, most of whom are under forty, and all of

whom are women, statistics show that mitral disease largely predominates. Thus, out of Porak's 92 cases, there were 22 instances of mitral regurgitation, with 3 deaths; 13 of mitral stenosis, with 8 deaths; and 22 of combined mitral lesions, with 10 deaths; in all, 57 cases, with 21 deaths. There were 13 cases of aortic lesions, with 3 deaths; while of 22 cases of complex lesions, 11 died. Remy found 29 cases of mitral insufficiency, with 6 deaths; 19 of mitral stenosis, with 11 deaths; and 15 of double mitral lesions, with 6 deaths; a total of 63 cases, with 23 deaths. Of the aortic cases, there were 12 with regurgitation, of whom 2 died; while 2 with stenosis and 3 with a double lesion recovered (17 cases and 2 deaths). Of complex lesions he found 16 instances, with 3 deaths. Of the cases which I have collected, there were 14 of mitral stenosis, with 4 deaths; 1 fatal case of mitral regurgitation; and 2 with combined mitral lesions, both of the latter recovering. There were 6 aortic cases, with 1 death; and 7 of complex lesions, with 4 deaths. If these latter figures be added to those of Remy, as the larger of the two series just quoted, we find the mortality-rate to be as follows: mitral stenosis, 45.5 per cent.; mitral regurgitation, 23.33 per cent.; double mitral lesions, 35.5 per cent.; and complex lesions, 30.5 per cent. The mortality-rate of the pure aortic cases was but 13.67 per cent., but 3 out of 23 dying, in all of which the valve was insufficient.

As these figures are drawn from the same source as those previously given, the same criticism is applicable, that they represent serious cases only, but so far as any conclusion is justifiable, they show that mitral cases are more apt to terminate fatally than aortic of apparently equal severity, and those with mitral stenosis than those with regurgitation, a conclusion which has its value, though a slight one, in estimating the chances of an individual case.

The means of determining the extent of the cardiac lesion are not altered by the advent of pregnancy; but the point was well made by McDonald, that the probability of its being compensated is much enhanced if it is not of very recent origin, for if the muscular substance of the heart has had opportunity to hypertrophy till it is able to counterbalance the valvular defect, it will be much more liable to prove sufficient under the additional strain than when the double duty is thrown upon it all at once. The prognosis is also better if the first appearance of serious symptoms is postponed until the later months; but in estimating their gravity it is essential not to confound those which are due to the cardiac lesion with those which result from the profound impression sometimes produced by an uncomplicated pregnancy upon the maternal organism, and which, though threatening, may be expected to pass off after the third month.

With the development of the uterus and the growth of its contents, coincident changes in the circulatory apparatus take place, and lead to a physiological hypertrophy and dilatation of the heart, while alterations in the composition of the blood induce a form of anæmia and so impair the cardiac nutrition that fatty and other degenerations of the myocardium are not very infrequent. Such changes occur gradually, and are not usually sufficiently pronounced to give rise to symptoms of failing compensation till between the fourth and sixth months; so that, other things being equal, little reserve power in the heart may be inferred

if they appear before that time. The reverse of this proposition, however, that the later the development of symptoms the better the outlook, is only partially true, as cases are occasionally met with where the patient has passed through her pregnancy without exciting any special anxiety, and yet has suddenly died from œdema of the lungs during labor or even in the puerperium. At times, also, death results from post-partum hæmorrhage, a not very infrequent occurrence in these cases, though it is possible that its gravity is often overestimated since it may be a conservative effort of nature, especially in mitral disease, to relieve an over-distended right ventricle.

In multiparæ the histories of their previous experience may give much valuable information, as the tendency of the cardiac symptoms is to grow more severe with each succeeding pregnancy, owing to the extra burdens which have been thrown upon the heart, and also occasionally to fresh attacks of endocarditis, to which pregnant women seem peculiarly liable. But little doubt can exist of the necessity of inducing abortion if there is a history of extreme danger in the previous pregnancy of grávido-cardiac origin, or if, with serious symptoms in the present, the lesion is found to be progressive from a rekindling of the endocardial inflammation. As the period of greatest danger is during the expulsive stage of labor from the participation of the abdominal and other muscles, after the necessity of terminating pregnancy has been once determined, the sooner it is done the greater the chances for the mother, especially if the fœtus is still small and the expulsive force can be chiefly furnished by the uterus. The idea that the induction of labor may be held in reserve until the patient is in a condition of imminent peril and then be resorted to in the anticipation of accomplishing any great measure of relief, does not seem to be justified by facts. Schlayer⁴ says that all cases in which premature labor was brought on under these circumstances in one of the obstetrical clinics of Berlin, died either during labor or shortly after, and in the published cases also recovery followed only in rare instances.

Regarding the moral side of the question it must be admitted that the child is apparently sacrificed for the sake of a mother whose health is permanently impaired and whose expectation of life at best cannot be long, but it is a fair question whether too much importance has not been attached to it, if the ultimate fate of the child be considered, when nature is allowed to take its course. Charpentier says that abortion and premature labor are very frequent and the children who are born at term do not live long. So sweeping a statement cannot, of course, be taken without qualification, otherwise it would be an almost imperative duty to induce abortion at the first sign of danger, but he quotes Casanova as believing that in more than half the cases where more or less marked symptoms have manifested themselves pregnancy is not completed, and says that Duroziez noted twenty-one miscarriages among forty-one women with heart disease, and five deliveries at six months, while thirty-seven of the children who were born alive died before reaching five years.

I cannot refrain from referring to a case of advanced mitral regurgitation which I saw yesterday, as it appears to illustrate so well this point; yet it must be admitted that the fate of the fifth child may have been an

accidental coincidence. The patient was a woman about thirty-six years old, and had been pregnant six times, the first four children being still alive. After the birth of the third child she had an attack of acute rheumatism, from which the cardiac lesion in all probability dates, although no sign of it became manifest until the fifth pregnancy, when she suffered from cough, dyspnœa and other evidence of cardiac embarrassment, but was delivered at term after a very rapid labor. The baby died eighteen months later of some acute pulmonary affection, which was said to be pneumœmia. During the sixth pregnancy she suffered from serious symptoms, and miscarried at the seventh month.

There seems to be little question that the mortality-rate among children born after serious cardiac symptoms have developed in the mother, is high, but statistics are meagre, as the child so often passes from observation after the lying-in period is over. The frequency of abortion or premature delivery, however, can be more closely approximated, though the opportunities for error in determining the ratio of this event are great, as in multiparæ it may be impossible to tell when the cardiac lesion first developed, and many of the earlier pregnancies may have been free from any cardiac complication. However this may be, Porak found that out of 214 labors 88 were premature, or 41 per cent.; while Remy, in 272 labors occurring in 112 women, found 87 premature, nearly 32 per cent., 51 taking place before the seventh month.

The fact that the death of the mother has not always occurred in apparently the most desperate cases, has probably had much to do in producing the conservatism which has heretofore prevailed. Yet it is not enough that the patient should come out alive, her future must also be regarded: and when one considers the loss of *morale* induced by the sense of her critical condition, the extra burden thrown by pregnancy upon a weakened heart, and the strain of parturition, so great that in a case of Simpson's rupture of the aorta occurred, it is not surprising to find that child-bearing has been the starting-point in many of these cases of a downward course soon followed by death, which was as much a result of it as though it had occurred before the puerperium was ended, but which, nevertheless, does not appear in the statistics.

I do not wish to be considered as holding a radical position on this question, nor as advocating so serious a measure as an abortion until other means have shown their probable futility, but would protest against allowing moral considerations to drive us into too great conservatism when the danger to the mother is so great and the future of the child so doubtful. I am inclined to believe that when the probable necessity for an abortion begins to be seriously considered, that in the long run we shall have less to regret if it is done immediately than if it is postponed till worse comes to worst under the delusive idea that it is an efficacious measure when employed as a last resort. Certainly after the seventh month, when the child is viable, the condition of the mother should be the chief guide for action.

The question of the advisability of marriage for women with valvular disease has been the subject of much ardent discussion. While it is true that many such patients have passed through numerous pregnancies without apparent harm, yet so many factors have to be considered, for whose estimation we have most insufficient evidence, that except for very unusual

⁴ Quoted in *Sem. Méd.*, March 30, 1892.

cases Peters's dictum seems to be the safest guide, namely, that such women should not marry, that if they are married they should not become mothers, and if they are mothers they should not nurse their children.

The points which I have wished to emphasize may be summarized in the following propositions:

(1) That many women with valvular disease, even when situated at the mitral orifice, pass through repeated pregnancies without the development of serious symptoms, and at times without suspecting that they are victims of such disease.

(2) That as miscarriages are very frequent, and the chances of the child's surviving more than a few years are doubtful, if the mother's condition during pregnancy has been serious, the probable fate of the latter should take so much more prominence in deciding the question of abortion.

(3) That the necessity of inducing abortion is very probable if grave symptoms have appeared during the early months or are present with an advancing lesion, or if there is a history of extreme danger in the preceding pregnancy.

(4) That if the necessity for an abortion becomes apparent, the sooner it is done the better, while the fœtus is still small and the expulsive force chiefly furnished by the uterus.

(5) That the hope that relief may be given when the case has become desperate by inducing abortion is delusive, as it is possible that it only increases the danger.

(6) That marriage should be forbidden, except perhaps in very unusual cases, to women suffering from cardiac disease.

SIX CASES OF EXTRA-UTERINE PREGNANCY.¹

ONE A PREGNANCY IN BOTH TUBES AT THE SAME TIME, WITH THE POSSIBILITY OF THERE ALSO BEING A TWIN PREGNANCY IN THE LEFT TUBE. — CÆLIOTOMY. — RECOVERY IN ALL.

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CASE I. G. F., married, aged twenty-eight, consulted me on Tuesday, September 29, 1891. A diagnosis of extra-uterine pregnancy was made, and I operated on her at the Carney Hospital. The following is the history of the case and the result of the examination:

Dysmenorrhœa since puberty. The pain, situated in front and low down in the abdomen, comes on several days before the flow, and lasts throughout menstruation. For the past year has had quite severe pain in the right ovarian region when unwell. Flows five days. Flows quite freely. Leucorrhœa for years. Had always been regular to the day until August 9th. Instead of menstruating at this time, she went to August 16th, just one week over her time. August 16th flowing began, and continued, at times profusely, for two weeks. In two weeks the flowing again began, and has continued up to the present time. Since August 16th, when the flowing began, until September 20th, has had a dull pain in right ovarian region. The breasts have enlarged.

Sunday, September 20th, was suddenly seized with severe, cutting pain in right ovarian region. This

pain lasted one hour, and produced fainting. This severe pain was repeated September 28th, and lasted two hours. Formerly the pain in the right ovarian region was dull in character, but since the severe attack of pain it has been more cutting in character. From August 9th to August 16th, the week following the date of expected menstruation, there was a dull, heavy dragging-down in lower abdomen.

Examination. — From half-way between umbilicus and pubes, extending over the whole of the lower part of the abdomen, there was marked sensitiveness on pressure. By vagina, a soft mass, the size of the fist, excessively sensitive, was found in Douglas's pouch, and on this the uterus rested in a position of retroversion. Bright red blood flowed from the cervix. Uterus measured three inches in depth. Temperature 99°, pulse 110.

Operation. — On opening the peritoneal cavity, dark-colored blood welled up through the incision. The abdominal cavity below the incision contained fluid and clotted blood of a dark color, and no bright blood was found until the right tube and ovary were brought into view. A portion of the right tube towards the ovary was found dilated. This dilatation was about the size of a small English walnut, and from the upper part of it fresh blood oozed out through an opening the size of a pin's head. The right tube and ovary were ligated and removed. On the left side a cystoma of the ovary was found, and it, with the tube, was ligated and removed. The peritoneal cavity was thoroughly washed out with a salt solution, and the abdomen closed. About a quart of fluid and coagulated blood were removed. The mass in Douglas's pouch was composed of coagulated blood, and was dug out with the fingers. Convalescence was uninterrupted.

Twenty-three days after the operation she was discharged well. December 2d, she reported that she felt perfectly well.

Dr. Whitney's Report. — "The following is the description of the ovaries and tubes from the case of Mrs. G. F., received from you October 1, 1891:

"(1) Ovary and Tube. The portion of the tube measured about six and one-half centimetres. About two centimetres from the fimbriated end, which was normal, was a rounded enlargement measuring about two and one-half centimetres by two centimetres, dark red in color, and covered with shaggy, thin adhesions. About the middle of the nodule, opposite the side of the ligament, was a very small rent with a hæmorrhagic, infiltrated edge. The remainder of the tube, about two centimetres, was of normal size and calibre. Sections made through the nodule, and examined microscopically, showed the greater part to be made up of blood clotted among small, villous projections, fibrous in character, and covered with a low epithelium, similar in every way to the villi of an immature placenta. Just beneath the outer surface were large and very thin-walled vascular sinuses. The cavity of the tube was dilated, and its lining membrane was apparently reflected up on to the mass of blood and villi; but whether it was continuous entirely over it could not be determined. Apparently, however, it was not. From the distal end of the nodule there opened a distinct diverticulum from the tube, which could be followed almost to the fimbriated end, where it stopped. The relations were such as to show that the nodule had developed entirely in the main tube, and not in the diverticulum. In none of the sections was there

¹ Read before the Obstetrical Section of the Suffolk District Medical Society, December 28, 1893.