TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the major medical disorders met with in general practice

TREATMENT OF HEART DISEASE IN PREGNANCY

BY

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From the point of view of treatment it is convenient to classify young women suffering from heart disease in three categories. The first includes the more serious cases. In these pregnancy should be prohibited, or, if it occurs, terminated in its early stages. The second consists of cases in which it is considered advisable to anticipate the normal termination of pregnancy either by Caesarean section or by the induction of premature labour. The third comprises the more trivial cases, in which pregnancy may be allowed to pursue its normal course.

The therapeutic procedures advocated in this paper are based on observations made on a consecutive series of 300 patients found to be suffering from organic heart disease at the ante-natal clinic at St. Mary's Hospital, Manchester,* and kept under observation during the later months of pregnancy, labour, and the puerperium. Fifteen of these patients have been observed during more than one pregnancy, and many of them have been re-examined three, four, or five years after confinement.

Treatment of the First Group

In all patients with auricular fibrillation, as well as in those whose medical history indicates that they have manifested signs of congestive heart failure in the past, pregnancy should be prohibited, or, if present, terminated in the first three months. Unfortunately many of these patients do not come under medical supervision until pregnancy is well advanced. Emptying the uterus is then a more serious matter. In these circumstances the safest course is to wait until the child is viable, and then to terminate pregnancy either by Caesarean section or by the induction of premature labour.

If heart failure has set in and is attributable to auricular fibrillation, confinement to bed and treatment with digitalis are indicated. Usually 20 minims of the tincture or 2 grains of the powdered leaf given three times a day will suffice, but in cases of extreme urgency three doses, each of 1 drachm of the tincture, may be prescribed at intervals of six hours; alternatively, 1/100 grain of strophanthin may be injected intravenously, and repeated in two hours if necessary. When the massive dose method of oral administration is employed it is important to be sure that the patient has not been taking any drug of the digitalis group during the preceding three weeks, and to be on the look out for toxic symptoms such as nausea, vomiting, coupling of the heart beats, and oliguria. Opinion is divided as to the value of digitalis in heart failure with normal rhythm. Although one cannot expect the same dramatic results as in patients with auricular fibrillation, I am convinced that it often does good in small doses—that is, 10 minims of the tincture, 1 grain of the powdered leaf, or 1/600 grain of Nativelle's digitaline twice or three times a day.

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The other drugs upon which I place most reliance in acute heart failure are cardiazol and coramine. Both these preparations are supplied in ampoules for subcutaneous injection, and one ampoule may be injected every four hours if necessary. Volatile stimulants are also useful in emergency. The old-fashioned ammonia smelling bottle, which was so popular in the days when young women used to swoon on the slightest provocation, is an effective stimulant to the respiratory and vasomotor centres. A more elegant and stronger preparation is the "vaporole" of aromatic ammonia. Brandy should only be administered in emergencies and by a nurse under the doctor's orders. It has a dual action, the immediate effect being due to inhalation of the vapour, and the later effect to absorption from the stomach. It is to the former that it owes its reputation in emergencies. As an alternative we may prescribe a mixture containing 20 minims each of the aromatic spirits of ammonia, spirits of chloroform, and compound tincture of cardamoms. In cases of heart failure with persistent vomiting resulting from the congested condition of the gastric mucous membrane iced champagne may be retained when other fluids are rejected.

Treatment of the Second Group

This group includes patients whose hearts show signs of failing during the later months of pregnancy. The choice between Caesarean section and the induction of premature labour in any particular case is one that should be left to the obstetrician. The cardiologist's duty in such cases is to advise the termination of pregnancy by whichever method the obstetrician considers will cause the patient least distress. I personally have a prejudice in favour of Caesarean section; for, although this operation may be followed by considerable discomfort from abdominal distension, it is surprising how well it is tolerated by most patients with serious heart disease. In my own series of 300 cases, Caesarean section was performed on account of the cardiac condition in twelve patients, and of these only one died, death being due to cerebral embolism ten days after delivery. This patient had auricular fibrillation, and was doing well up to the time the embolism occurred.

Induction is apt to be a tedious process, for the duration of labour is often considerably prolonged. In twenty-seven inductions in this series there were four deaths. One great advantage of both these procedures is that by them one can save the patient from the strain of the last weary month of pregnancy, the time when the heart is most likely to give out.

It cannot be over-emphasized that when, for cardiac reasons, it is decided to terminate the pregnancy artificially, no operative procedure should be undertaken until the heart failure has received adequate treatment. When a patient is admitted to hospital as an urgency in the last two months of pregnancy with serious cardiac failure, the obstetrician is apt to feel that unless immediate steps are taken to terminate the pregnancy a fatal issue may ensue. Experience shows, however, that the risk of delay entailed by devoting a few days to the relief of heart failure by medical means is infinitely less than the risk imposed by operative intervention when the cardiac condition is critical. In such cases it is only by the closest possible co-operation between the cardiologist and the obstetrician that we can hope for the best results.

Treatment of the Third Group

When pregnancy is allowed to pursue its normal course adequate ante-natal supervision is of the very greatest importance. During the later months of pregnancy the patient should report for medical examination once a fortnight; and the points to which special attention should be paid are the presence of undue dyspnoea or tachycardia, engorgement of the veins in the neck, enlargement of the liver, persistent moist sounds at the bases of the lungs, and oedema. All these signs indicate that the patient is not observing her limitations, and requires more rest. If they are recognized early, the heart usually responds readily to treatment, and a few days in hospital or in bed at home (if the patient's circumstances permit of adequate attention) will generally suffice to restore the normal balance. If, however, these signs are neglected the outlook is much more grave. Nine of our seventeen fatalities were in patients who had never attended the ante-natal clinic, but were admitted to hospital as "urgencies" with acute heart failure.

The clinical significance of oedema is not always easy to assess. In many perfectly healthy women slight oedema of the feet and ankles appears during the later months of pregnancy. It is not necessarily a sign of heart failure, and may, as Osman has pointed out, be due to a disturbance of the calcium balance. Benign oedema of this nature, however, never appears during the first four months of pregnancy. Hence it is only during the later months that this difficulty in diagnosis arises. When oedema is an isolated sign and is not associated with general venous engorgement, it is of much less significance than when it is accompanied by enlargement of the liver and moist sounds at the bases of the lungs.

General Measures

Pregnancy, especially during the later months, imposes a considerable additional burden on the damaged heart. We must accordingly take steps to lighten its work in other ways. The avoidance of physical exertion and a liberal allowance of sleep and rest are essential. A minimum of twelve hours in bed at night, in addition to two hours' rest in the afternoon, is desirable; while, during the last two months, one whole day in bed each week is a wise precaution. Patients often ask how much they may be allowed to do. In this they must be guided by their symptoms. I regard dyspnoea and undue fatigue as the danger signals which cannot safely be overlooked.

Rest is the most important therapeutic measure in the treatment of heart failure, and by rest I mean not only physical, but mental relaxation. When respiratory and other discomfort interferes with sleep, cerebral depressants are indicated. A mixture containing 10 or 15 grains of ammonium bromide combined with 3 or 4 minims of Fowler's solution, taken three times a day, is often helpful in such cases. A pleasant proprietary preparation is sedobrol, each tablet containing $17\frac{1}{2}$ grains of bromide. One or two tablets dissolved in a breakfast-cupful of boiling water may be administered at night. In cases of more persistent insomnia I find 5 grains of dial, either alone or combined with a similar quantity of aspirin, a safe hypnotic. When actual pain, due to an engorged liver or to other causes, is responsible for the patient's unrest, I have no hesitation in giving morphine hypodermically ($1/6$ grain to $1/4$ grain). When oedema is extensive and persistent, diuretin, 10 to 15 grains three times a day, is a useful remedy, and restriction of salt in the diet should be enforced. In the less acute cases I rely chiefly on the phosphate tonics, of which there are many good proprietary brands (metatone, bynin amara, etc.) on the market. When flatulence is troublesome a couple of sodamint tablets after meals will often bring relief.

Bronchitis

Bronchitis is a common complication which calls for special mention. It throws a great strain on the right heart, and may be responsible for the appearance of heart failure. My own experience is that most of these cases do well, and that when the bronchitis subsides the signs of heart failure disappear. During the acute stage inhalations of tinct. benzoin. co. (1 drachm to the pint) and similar preparations are most soothing. The temperature of the sick-room should be maintained at 65° to 70° F., and the atmosphere kept moist. In a small room the old-fashioned "bronchitis kettle" is hard to beat. When the acute inflammation has subsided a stimulating expectorant mixture, such as the following (or alternatively ammonium carbonate alone, 4 grains in milk), is useful:

R.	Ammon. carb.	...	...	...	gr. ijss
	Vinum ipecac.	...	...	...	℥ v
	Tinct. nuc. vom.	...	...	...	℥ x
	Tinct. camph. co.	...	...	...	℥ x
	Infus. senegae	...	...	...	ad 3 j

Oxygen therapy is useful in these cases, since it is capable of relieving anoxaemia resulting from deficient oxygenation of the blood in the lungs. The aim of oxygen therapy is to increase the partial pressure of oxygen in the alveolar air. Judged by this, which is the only valid criterion, the method of delivering oxygen from a funnel suspended at a distance of some inches from the patient's face is quite useless. Careful measurements show that, unless the funnel is actually in contact with the face, the old open method is incapable of producing any appreciable rise in the oxygen tension of the alveolar air, and that even so the results compare unfavourably with those obtained by means of a nasal catheter or a closed mask of the type devised during the war by Professor J. S. Haldane for use in cases of gas poisoning. The nasal catheter can be held in position by a small piece of strapping attached to the lip. In order to render it less irritating the oxygen should be bubbled through water. This device also enables the nurse to gauge the amount of oxygen which is being given. It should come through at the rate of about five bubbles per second. A tablespoonful of brandy may be added to the water in the bottle, so that the oxygen acts as a vehicle for carrying over the alcohol vapour.

Summary

Let me summarize my views on this subject by saying that pregnancy should be forbidden in all patients with established auricular fibrillation, and in all those who are known to have suffered from congestive heart failure in the past. When patients in this group are seen in the early months of pregnancy the uterus should be emptied. When they do not come under observation until later they should be kept at rest, and when the heart failure is relieved and the child is viable Caesarean section should be performed. I wish especially to emphasize the fact that pregnancy should never be interfered with until every effort has been made to relieve the heart failure by medical treatment.

In the less severe cases of heart disease pregnancy should be allowed to pursue its normal course under strict medical supervision. In our series all cases in which the heart showed signs of giving way were admitted to hospital, and most of them responded promptly to treatment. I am convinced that many of these patients, had they not been treated in hospital, would have developed congestive heart failure, and some would probably have died.