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

THE TREATMENT OF PERSISTENT AURICULAR FIBRILLATION AND FLUTTER

BY

TERENCE EAST, M.D., F.R.C.P.

The treatment of paroxysms of auricular fibrillation and flutter, and of heart failure with fibrillation, is dealt with in other articles. When these arrhythmias are persistent they require management on rather different lines. Auricular fibrillation is about twelve times as common as auricular flutter. It is the commonest cardiac condition for which persistent treatment may be required. Although the two disturbances are similar in nature, it is convenient, from the point of view of treatment, to consider them apart.

Auricular Fibrillation

The completely irregular rhythm, best recognized by auscultation at the apex of the heart, usually associated with a rapid ventricular rate, makes diagnosis easy. In order to understand the rationale of treatment, a word on the nature of fibrillation may be helpful.

When the auricles are fibrillating the rhythmic formation of impulses at the sinu-auricular node is abolished, and co-ordinated systolic contraction of the chambers ceases. Instead, an impulse circulates round a chosen path in the auricle, making its revolution 400 to 500 times a minute. This is called "circus movement." At each revolution an impulse would pass down the bundle of His to the ventricle, if the bundle could conduct so many. But it can only transmit up to 250 a minute as a rule. Owing to variation in the path of the circulating impulse, and some degree of block in the auricular node and bundle, the impulses are transmitted irregularly. This is the reason of the rapid, irregular ventricular rate. The circus movement of auricular fibrillation (or of flutter) tends to persist indefinitely when once established. Hence the old term "pulsus irregularis perpetuus."

Mitral stenosis accounts for about 65 per cent. of all cases of auricular fibrillation. Almost all cases of mitral stenosis pass into permanent auricular fibrillation sooner or later. Most of the remaining 35 per cent. of cases are found in old people. In some, the action of a toxin is responsible, and a large number of those toxic cases are sufferers from thyrotoxicosis. It will be apparent that the two chief causes, mitral stenosis and old age, cannot be eliminated; this is another reason for the persistence of auricular fibrillation.

Auricular fibrillation leads to heart failure because it causes a persistently rapid ventricular rate. In addition, the normal acceleration of the heart on exertion or emotion is exaggerated and prolonged. A large proportion of the contractions are ineffective and a waste of energy. As long as fibrillation is still present the danger of an increase in the ventricular rate is always there. It must be remembered that fibrillation is either present or it is not. Misconceptions sometimes exist on this point. There is a tendency to associate the state of the pulse

directly with the fibrillation. If the irregularity of the pulse is slight and the rate slowed, one hears the remark "fibrillating slightly"; and when the rate is fast and irregularly pronounced "fibrillating severely." This is erroneous. These variations depend on the state of the bundle of His; the fibrillation is unaffected. The treatment of persistent fibrillation aims at preventing the development or return of heart failure.

Digitalis in Fibrillation

The control of the ventricular rate must be maintained by the constant administration of digitalis. If the tincture is used the following prescription may be given:

R	Tinct. digitalis	...	...	...	...	℥ x
	Aq. chlorof.	...	...	...	...	ad 3 ss

One tablespoonful thrice daily.

Now that several solid preparations are available the equivalent of half a drachm of the tincture daily may be given in that way. The solid preparations are better than the tincture, as they do not deteriorate and they are convenient to carry about. One grain of the powdered leaf thrice daily, or digoxin (B.W. and Co.) one tablet of 0.25 mg. twice daily, or digitalis nativelle 1/600 grain twice or thrice daily, are the usual doses. Some patients may need larger doses: 4 grains of the powdered leaf daily, or 0.25 mg. digoxin thrice daily. It will be seen that 30 minims of the tincture are equivalent to 3 grains of the powdered leaf, or to 0.5 mg. of digoxin. With nervous and excitable patients 10 grains of potassium bromide may be added to each dose of the mixture containing the tincture. In these patients the action of the sympathetic on the bundle of His continually tends to cause undue ventricular acceleration.

Larger doses may be required when auricular fibrillation complicates thyrotoxicosis. But in these cases successful treatment aims at elimination of the hyperthyroidism, and the abolition of the fibrillation subsequently. Doses such as these can be maintained indefinitely, and rarely lead to toxic symptoms. If there is any tendency to toxic cumulative effect the drug may be withheld on one day in the week—Sunday for choice, when less work is usually done. Strophanthus is too variable in its action for the steady control of the ventricular rate. The infusion of digitalis is unsatisfactory because of its uncertain strength and liability to deterioration.

Life and Occupation

The patient with persistent fibrillation usually has valvular and myocardial lesions of some severity. He will have to lead a restricted life, and control strictly the amount of exertion he undertakes. Anything in the nature of heavy manual work is barred. In many cases a fair degree of activity is possible. The limits are set by what the patient can comfortably do. Sudden strain and exertion are particularly to be avoided. Pregnancy is dangerous for a woman with fibrillation, and should be terminated if it occurs. If any infectious illness arises, the daily dose of digitalis will probably have to be increased 50 or 100 per cent., according to the tendency of the apex rate to increase. In old people a certain amount of natural heart-block may keep the apex rate low and make the use of digitalis unnecessary.

The Abolition of Fibrillation

In suitable cases abolition of fibrillation may be attempted by means of quinidine. This drug is a cardiac depressant, and may get rid of the circus movement in the auricle by increasing the duration of refractoriness in heart muscle. As it slows the rate of the circus movement at the same time these two effects may cancel one another, so that no beneficial effect is obtained.

When mitral stenosis is advanced, or there is evidence of myocardial damage in the senile type of case, quinidine is rarely successful, and is best not tried. Control with digitalis is the method of choice. If the accompanying lesions are but slight, and the heart is strong, it may be possible to abolish fibrillation. There is one type of case in which quinidine is usually successful—that in which the fibrillation persists without apparent cause. Some transient illness may have brought it on.

During the course of treatment the patient should be confined to bed. Quinidine sulphate may be given in 5-grain doses in a capsule, or in an acid mixture.

R.	Quinidin. sulph.	...	...	...	gr. v
	Acid. sulph. dil.	...	...	...	℥ v
	Syr. aurant.	...	...	...	3 j
	Aq. menth. pip.	...	...	...	ad 3 j

A preliminary dose should be given first to ascertain whether the patient has any idiosyncrasy. If there is no headache, nausea, vomiting, or malaise the course may be completed. It is advisable to keep a chart of the apex rate, for there may be some rise after the first two or three doses. This acceleration is not likely to cause trouble if the patient is already under digitalis. After the preliminary dose further doses of 5 grains may be given every three or four hours until a normal regular rhythm has been resumed, or until 30 or 40 grains have been taken, or until the patient shows signs of intolerance. Some push the total dosage of the drug up to 60 grains or more. Another method of dosage is to prescribe 5 grains every two hours during the day for six doses, and repeat this again on two or three successive days. If quinidine is successful it usually acts after the first few doses. If normal rhythm is resumed it is wise to give 5 grains daily for a week or two in order to obviate any tendency for fibrillation to return.

Auricular Flutter

Auricular flutter differs from fibrillation in that the course of the circus movement is constant and regular. The rate of circulation is slower than in fibrillation—usually about 320. Ventricular response is regular as a rule, occurring at a definite ratio—1 to 2, or to 3, or to 4 of the revolutions of the impulse of the auricle, with resulting rates of 160, 106, or 80 per minute.

Flutter is more likely to be associated with serious myocardial disease than is fibrillation. The age incidence is higher; it is more common in men than in women.

Digitalis.—The action of digitalis is similar to that obtained in auricular fibrillation, and the ventricular rate can be slowed. There is usually some difficulty in keeping the rate low, as there is always a tendency to increase to a higher ratio—from 1 to 4 (apex 80) to 1 to 3 (apex 106), or 1 to 2 (apex 160): a 1:1 ratio with an apex rate of about 300 is sometimes met with. As a result, the treatment of persistent flutter with digitalis is not so satisfactory as in fibrillation. It is often possible to transform flutter into fibrillation if full doses of digitalis are given, say 2 drachms of the tincture daily for three days to a patient weighing 10 stone. The rate at the apex falls, to a 1 to 4 ratio, and then may become completely irregular. This shows the change to fibrillation. If the digitalis is stopped a return to normal rhythm may result in a day or two, sometimes in a few hours. Some

cases persist in fibrillation. They are better off than with flutter, as their apex rate is more easily controlled, and the sudden increases in rate are avoided. About 50 per cent. of cases of flutter can be changed to fibrillation. In about 30 per cent. of these there is return to normal rhythm.

Quinidine.—If the flutter persists in spite of digitalis quinidine may be administered as in a case of fibrillation. The circus movement may then be abolished, with a return of normal rhythm. Quinidine may also be used if digitalis has changed flutter to persistent fibrillation in the hope that normal rhythm may be resumed. The treatment succeeds in about 30 per cent. of cases. Heavy doses of quinidine, such as may be needed, should not be given when the heart is grossly diseased or near to failure. The patient should stay in bed while the abolition of flutter is being attempted.

Life and Occupation.—Patients with persistent auricular flutter need to lead a very restricted life. The heart is usually the seat of considerable disease. The apex rate is difficult to control. Digitalis must be given continually on the same lines as for a case of persistent fibrillation.

A PAIR OF SPECTACLES

BY

J. D. M. CARDELL, F.R.C.S.

The date when the first pair of spectacles was made has not been established beyond doubt. It has been stated that the Chinese at one time used bleached horn from which lenses were fashioned, while Nero is said to have used a precious stone mounted in a ring, through which he watched games in the circus. This may have been a lens, or merely a tinted protection against over-strong light. In a fourteenth century manuscript in the Bibliothèque Nationale in Paris there is a picture of St. Paul using a pair of spectacles. Marco Polo records that, when travelling in China in 1270, lenses ground from quartz or semi-precious stones were being used as an aid to sight. So much for the more nebulous historical evidence.

From the Thirteenth Century Onwards

In 1276 Roger Bacon refers to the possibility of glass lenses being used by those who are old and have weak sight. Spina, a Dominican friar who died in 1313, and is generally considered to be the inventor of spectacles, probably exploited Bacon's idea, though there is a tomb in the Church of St. Maria Maggiore with the rather naïve epitaph:

"Here lies Salvino d'Armato of the Armati of Florence, Inventor of spectacles. God pardon him his sins. A.D. 1317."

Salvino may, however, have merely popularized Spina's "invention."

The date is therefore fairly certain as regards the first use of spectacles in Europe. The original type was a single magnifying glass with a short handle; another lens was then placed in the opposite end of the handle with a hinge in the middle so that both eyes might be assisted. There are numerous references, which need not be cited here, to the use of spectacles in the thirteenth and fourteenth centuries, Bernard Gordon, professor of medicine at Montpellier in about 1305, being the first physician to refer to them. The introduction of printing probably increased the demand for spectacles.

The lenses were first made of tourmaline, beryl, quartz, and later of glass. The glass employed was primarily produced in Venice, but subsequently its manufacture extended to Germany. The first German frames were