

Three years' experience of electrocardiography in a general practice

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Summary

Electrocardiography has a useful place in general-practice cardiology:

- (1) by bringing to light unexpected findings thereby altering the diagnostic spectrum and, in some cases at least, management.
- (2) by acting as a monitor in the continuing management of patients suffering from some forms of cardiovascular disease, and, in particular, from essential hypertension.

In 1970 the purchase of a 'Cambridge Transrite' 4-2 battery two-speed electrocardiograph made it possible to test the value of this working tool in a practice population of about 5,300 patients. Before this, members of the medical staff of the Department who needed electrocardiograms for any of their patients made the appointments with the Cardiology Department, The Royal Infirmary, Edinburgh, or, later, with the nearby Family Doctor Centre of the Scottish Home and Health Department.

Analysis

Electrocardiography on the practice premises was started at the beginning of July 1970. At the end of the first three years' working, it was decided to carry out an analysis to find out:

- (1) How much use was made by members of the medical staff,
- (2) How far the ECG findings modified the clinical appraisal of any patient,
- (3) How far the ECG proved helpful in the continuing management of any patient.

(1) The amount of use by the medical staff

During the period under review, 239, 12 (later 14) lead electrocardiograms were taken from 200 patients. The two leads added as routine in the later stages of the study were V_3R and V_4R . The medical staff varied in their referral of patients for electrocardiography and therefore one cannot gauge the extent of cardiovascular disease in the practice as a whole. Table 1 shows by age and sex, the number of patients with and without ECG evidence of heart disease among the 200 examined. The incidence of heart disease in this particular group was roughly 25 per cent.

(2) How far ECG findings modified the clinical appraisal of any patient

Of the 239 ECGs, five had to be rejected for technical reasons. Findings of pathological significance appeared in 62 of the remaining 234 tracings. The main categories were:

- (a) Myocardial infarction—18 (five recent, 13 old),

- (b) Myocardial ischaemia without evidence of infarction—ten,
- (c) Left ventricular hypertrophy with or without ischaemia—14,
- (d) Atrial fibrillation—seven.

The remaining 13 abnormal tracings covered almost as many pathological entities ranging from 'prominent U waves? hypokalaemia'? (this was later confirmed biochemically—the plasma K of this patient was 2.9 m.eq/L), to an example of the uncommon finding of right bundle branch block + left posterior hemiblock. More than one abnormal finding was present in some tracings.

TABLE 1
RESULTS OF ELECTROCARDIOGRAPHIC EXAMINATION OF 200 CONSECUTIVE PATIENTS
JULY 1970—JUNE 1973

<i>Sex</i>	<i>Age</i>	<i>No ECG evidence of heart disease</i>	<i>ECG evidence of heart disease</i>	
M	<20	1	—	
	21-30	6	—	
	31-40	9	—	
	41-50	19	5	
	51-60	16	8	
	61-70	19	3	
	71-80	4	4	
	81+	1	—	
		75	20	95
F	<20	3	—	
	21-30	3	—	
	31-40	10	1	
	41-50	22	—	
	51-60	15	7	
	61-70	18	10	
	71-80	4	8	
	81+	1	3	
		76	29	105
Totals		151	49	200

3. How far the ECG proved helpful in management

A. Repeat investigations

Of the 234 recordings examined and reported on, 34—covering 29 patients—were repeat investigations. Five patients each had two repeats, the remaining 24, one repeat. Of these, seven were initiated by the writer (usually after consultation with a specialist cardiologist) because of findings of doubtful significance on the first tracing. The remaining 27 were initiated by the patients' own doctors for the following reasons:

- (a) Clinical deterioration—six patients.
- (b) Routine ECG follow-up.
 - (i) Known hypertension—11 patients.
 - (ii) Known chronic obstructive airways disease—three patients.
 - (iii) Known (or suspected) ischaemic heart disease—six patients.
- (c) Apparent incompatibility of ECG and clinical findings—one patient.

Results

In four cases the ECG recorded improvement on the previous findings, in 12 there was deterioration and in the remaining 18 there was no change.

B. Patients suffering from diastolic hypertension

In the early days of this study members of the medical staff were given a perfectly free hand in referring patients for electrocardiography; as the study proceeded they were asked in particular to earmark and to send for electrocardiography those of their patients suffering from diastolic hypertension. There were two main reasons for this:

- (a) The drug treatment of moderate and of severe diastolic hypertension is now reasonably satisfactory despite troublesome side-effects and the necessity for a lifetime of therapy—monitoring is therefore necessary.
- (b) Electrocardiography can play a useful part in such monitoring by alerting the doctor to the onset of left ventricular hypertrophy in his patient—a complication which, as shown, *inter alii*, by Kannel and his team (1969, 1970) in their long-term prospective study at Framingham (Mass.) at once places the patient in the high-risk category. It is now accepted that electrocardiography is, at present, the most reliable tool for detecting the presence of left ventricular hypertrophy.

Table 2 shows that, at the time of electrocardiography, 64 of the 200 patients examined appeared to be suffering from diastolic hypertension at one or other of two levels of severity. The figures are derived from the blood pressure readings as recorded on the ECG request forms. These were casual readings and, as such, they are almost certainly exaggerated. Nevertheless 14 of these patients were found, on electrocardiography, to show left ventricular hypertrophy—of these only four were known, from

TABLE 2
INCIDENCE OF DIASTOLIC HYPERTENSION IN 200 CONSECUTIVE PATIENTS EXAMINED BY
ELECTROCARDIOGRAPHY

Sex	Age	Diastolic BP at date of ECG		
		95–114 mm Hg	115 mm Hg +	
M	<20	—	—	
	21–30	1	—	
	31–40	1	—	
	41–50	2	2	
	51–60	6	—	
	61–70	7	1	
	71–80	1	1	
	81+	—	—	
		18	4	22
F	<20	1	—	
	21–30	—	—	
	31–40	3	2	
	41–50	2	2	
	51–60	5	3	
	61–70	9	3	
	71–80	6	4	
	81+	2	—	
		28	14	42
Totals		46	18	64

investigation elsewhere, to be suffering from this complication, the other ten were unsuspected.

Of these 14 patients, three have since died—all of cardiovascular pathology; among the other 50 hypertensive patients without evidence of left ventricular hypertrophy only one death is known to have occurred so far.

Discussion

To the question, "was it worth doing?", the answer is yes, provided one is prepared to recognise that electrocardiography, like many other technical aids, has its limitations. This affirmation is in keeping with those of, among others, Maingay *et al.* (1961), Keable-Elliott (1965), French (1966) and Sheehan and Sheehan (1969). There are some obvious essentials:

- (a) The recordings must be technically good,
- (b) the member of the practice reporting on them must have had adequate training in interpretation and must have ready access to a cardiology unit for a second opinion in difficult cases,
- (c) electrocardiography is a necessary step in the attempt to solve a cardiological problem but it must always be used in conjunction with the clinical and the radiological findings and, where appropriate, with the biochemical findings.

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THE TREATMENT OF RHEUMATIC AND DEGENERATIVE ARTHRITIS

A double-blind, between-patient study comparing 'Tandalgesic' (a mixture of 50 mg oxyphenbutazone with 500 mg paracetamol) at a dosage of six tablets daily with 0.4g aspirin tablets also at a dosage of six daily, was undertaken to evaluate their relative efficacy and tolerance in rheumatic and degenerative conditions commonly seen in general practice.

A total of 129 patients was admitted to the study, of whom 104 completed the trial lasting for four weeks. Of the 104 completing, 52 received the oxyphenbutazone and paracetamol mixture, and 52 received aspirin. 'Tandalgesic' appeared to be superior for the relief of pain and tenderness, and had also some advantage in improvement of overall function and range of movement.

Gastric upset occurred in 31 per cent of patients receiving aspirin, and in only 19 per cent of those on 'Tandalgesic'. The incidence of non-gastric side-effects, mainly trivial, was the same in both groups, *viz.* nine per cent.

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