Details of Remaining Cases (continued)

Case	Age	Duration of Symptoms	Physical Signs	Progress	Duration as In-patient	Follow-up
15	4½ months	8 days	Right ear: swelling above and in front of pinna, pushing it down and out; no fluctuation; slight discharge from myringotomy incision, performed 2 days before admission. Radiograph: "A few infected zygomatic cells on the right side"	2 days after admission: otorrhoea ceased. 5 days: swelling gone; drum appears normal. 8 days: diarrhoea. 9 days: vomiting also. 10 days: temperature and pulse rates raised; right zygoma feels warmer, and is slightly reddened and more prominent than the opposite side; right cortical mastoidectomy performed; the major part of mastoid process normal, but a chain of infected zygomatic cells found. 12 days: general condition much improved. Steady uneventful recovery	29 days	Right mastoid abscess 4 months later. Right otitis media 6 months later. Bilateral otitis media 8 months and again 11 months
16	8 years	7 weeks	Left ear: tender over lateral sinus; drum bulging postero-superiorly; purulent discharge from antero-inferior perforation	2 days: tenderness gone. 3 days: otorrhoea ceased. 10 days: drum retracted. 11 days: home	11 days	Circularized after 9 months: no further ear trouble
17	6 years	2 weeks	Right ear: profuse purulent discharge from anterior perforation. Tender mastoid tip	2 days: tenderness gone. 11 days: otorrhoea ceased	13 days	Circularized after 10 months: one attack of acute R.O.M. 4 months after discharge. Cleared up in a few days on sulphonamide and penicillin drops, given in O.P.

Progress.—April 17: Right ear dry; perforation seen to be antero-inferior; no palpable periostitis now, but ear still lower than opposite side. April 19: Perforation healed. April 23: Pinna back in normal position (Fig. 2). April 25: Could hear the whispered voice at 15 ft. (4.57 m.) both sides. Right drum normal except for the antero-inferior scar. May 5: Transferred to convalescent home.

Subsequent History.—June 17: T. and A. July 15: Both ears dry; no ear trouble since May 3. Circularized after nine months (February, 1949): No further ear trouble.

The remaining cases are described above in tabular form.

Response to treatment was immediately noticeable in the general condition of the children. This in our opinion is the most important criterion of improvement in all acute mastoid cases. If the child looks as if it were making progress it is making progress, the constitutional condition reflecting the improvement in the ear. The slightly yellowish appearance of the complexion reminiscent of the tint of a telegram envelope, easy with practice to recognize but difficult to describe, rapidly gives way to a healthy pink. This alteration in appearance is often discernible within a few hours after treatment has begun, and precedes any obvious local change. The temperature and pulse rate fall rapidly at first and then move gradually to normal. Local changes in the ear quickly follow. The redness and tenderness rapidly disappear, the oedema subsides first, and is followed by the disappearance of fluctuation as the abscess, where the infection has burst through the bone, absorbs. The ear returns to its normal position, discharge ceases, the drum regains its colour and lustre, and hearing is restored. Many of these changes are accomplished in 48 hours, and are usually complete within a week.

We consider that the end-results of this method of treatment, as shown by examination or replies to questions several months afterwards, are at least as satisfactory as if the cases had been operated on; and that after such a lapse of time any further ear trouble is more likely to be a reinfection than a "lighting-up" of the old one, and would be equally likely to occur in children upon whom mastoidectomy had been performed.

Dr. T. M. Montford, M.O.H. of Castle Donington and deputy chairman of the Leicestershire and Rutland Executive Council, was re-elected a member of the Management Committee of the Association of Executive Councils (National Health Service) at the Annual Conference held at Bournemouth recently.

ELECTROCARDIOGRAPHIC INVESTIGATION OF 264 CASES OF HYPERTENSION

BY

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Improvement in the electrocardiogram is an objective criterion to which the utmost importance has been attached in estimating the effect of treatment of essential hypertension. It has long been known that confinement to bed may in itself produce temporary improvement in the electrocardiogram. It is a matter of great interest that more comprehensive investigations carried out within recent years have revealed considerable and lasting improvement in the electrocardiograms of patients with hypertension, notably in the T-waves, as a result of dietetic treatment (Bryant and Blecha, 1947; Kempner, 1948; and others) and of sympathectomy (Canabal *et al.*, 1945; Peet and Isberg, 1946; Hammarström, 1947; and others).

There are few comparative records of electrocardiograms of untreated patients with hypertension followed up over a fairly long period. Canabal *et al.* (1945) recorded the electrocardiograms of 56 patients under 55 years of age through five years and found improvement in five cases only, all of them women under 50. They concluded that the electrocardiographic changes in hypertension tend to show that improvement occurs in few cases only, and then chiefly after acute conditions such as myocarditis and infarction. Rasmussen and Bøe (1945), after six years' observation of 39 hypertensive patients, found that the electrocardiogram showed deterioration in 14 cases, while it was unchanged in 22 (of which 15 were normal) and improved in only three.

In a previous follow-up of 1,000 out-patients with hypertension (Bechgaard, 1946) with a blood pressure on the first examination of 160/100, or 180 mm. systolic or more, I had not given sufficient attention to the importance of this fact and had not followed the electrocardiograms of the individual patients with this in mind. The electrocardiograms have therefore since been revised. On the first examination 890 patients had been submitted to electrocardiography. As appears from Table I, and from a statement by Aastrup (1937), the prognosis was considerably

worse for patients with a morbid electrocardiogram on the first examination than for those with a normal one.

TABLE I

E.C.G. on First Examination	No. of Patients	Second Examination	
		Living	Dead
Normal	753	591	162
Morbid	137	54	83

Present Investigation

Of particular interest are the electrocardiograms of 264 hypertensive patients under the age of 60, all of whom were alive 11 years later and all belonging to an age at which sympathectomy may be considered. In all these cases electrocardiograms were taken at the beginning and the end of the observation period, and in several instances once or more within this period. Two-thirds of these patients were women.

The usual criteria of a myocardial lesion have been applied in interpreting the electrocardiograms. An electrocardiogram with an isolated left-axis deviation was regarded as normal. The T-waves were accurately measured. To record an improvement it was required that T1 and T2 should be at least 0.1 mV higher at the follow-up than on the first examination.

In 162 cases the electrocardiogram was normal both on the first and on the second examination; in 48 the electrocardiogram was normal on the first examination but at the follow-up showed marked deterioration, revealing signs of a myocardial lesion in all cases; and in 45 cases morbid electrocardiograms on the first examination were mainly unchanged or aggravated at the follow-up. As shown in Table II, in only nine cases had the electrocardiogram

TABLE II

	Cases
Normal E.C.G. on both examinations	162
Normal E.C.G. → morbid on second examination	48
Morbid E.C.G. on both examinations	45
E.C.G. improved during the observation period	(9) 3
Electrocardiograms observed for from 4 to 11 years	264

improved in the course of the observation period. In three of these nine cases the T-wave in the first lead showed marked improvement, being at least 0.1 mV higher than on the first examination, and in two of them it had changed from negative to positive. In three cases a left-axis deviation had subsided, and in three some ventricular extrasystoles present on the first examination had disappeared.

It is only in the first three cases that we can say for certain that a really morbid electrocardiogram had undergone a change for the better. Hypertension persisted in all cases.

Discussion

The conclusion to be drawn from this investigation must therefore be exactly the same as that of Canabal *et al.*—namely, that definitely morbid electrocardiograms of patients with hypertension show very little tendency to improve when acute conditions, notably cardiac infarction, are left out of account, as in our cases. Improvement occurred in three patients only. This figure, though smaller, is in accord with the results of the investigations made by Canabal *et al.* and Rasmussen and Bøe—particularly so when the longer observation periods of my investigations are taken into account.

Actually, these investigations give too optimistic a picture of the spontaneous improvement in the electrocardiograms, since patients who died within the observation period have not been included. The deaths among patients with a

morbid electrocardiogram on the first examination were in the great majority of cases due to cardiac diseases. It is to be expected, therefore, that the proportion of spontaneous improvements would have been smaller if it had been possible to include these patients.

Lasting improvement in the electrocardiogram in hypertension, notably improvement of the T-waves, may therefore be regarded as a criterion of the efficacy of a treatment, spontaneous improvement being a comparatively rare occurrence. It may furthermore be remarked that in more than half of the patients the electrocardiogram remained normal throughout the observation period.

Great prognostic importance must also be attached to improvement in the electrocardiographic findings, since a morbid electrocardiogram must be regarded as an extremely grave prognostic sign in cases of essential hypertension. In my previous investigations into the prognosis of 1,000 hypertensive patients the mortality rates were compared with the average mortality among the Danish population, the age distribution and the length of the observation period being taken into consideration. For men with electrocardiographically demonstrable myocardial lesions the mortality was found to be 5½ times as high as the average mortality, and for women about 3 times as high, as compared with 2 and just over 1 respectively for hypertensive subjects with normal electrocardiograms.

Summary

The electrocardiograms of 264 out-patients under 60 years of age with essential hypertension have been followed for from 4 to 11 years.

Of these, 162 had normal electrocardiograms on both the first and the second examination.

Forty-five patients presented fairly unchanged morbid electrocardiograms on the two examinations.

In 48 cases a marked deterioration had occurred.

In nine cases the electrocardiogram had improved, but significantly so in three cases only.

The follow-up of 1,000 patients with hypertension disclosed a mortality rate for men with electrocardiographically demonstrable myocardial lesions 5½ times greater, and for women nearly 3 times greater, than the average mortality, against 2 and 1 respectively for hypertensive subjects without this sign.

A treatment of essential hypertension which is capable of effecting a regular and lasting improvement of the electrocardiogram must be regarded as of real value.

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The Ministry of Health states that in the removal of persons of unsound mind to mental hospitals it may be necessary in some cases to have trained staff from the hospital in attendance to accompany the patient in the ambulance or car and if necessary to assist in the removal. Requests for assistance will usually be made by duly authorized officers of local health authorities, and when hospital management committees are asked to provide trained personnel for this purpose they should do their best to comply. The smooth working of arrangements will entail the closest co-operation between officers of the hospital management committee and of the local health authority. No charge will be made to local health authorities for the services of staff provided under these arrangements.