Community Control of Hypertension —International Activities—

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IT IS NOT POSSIBLE to give an absolute figure for the upper limit of normal blood pressure in an individual person. However, for screening among population groups, it may be accepted that values of 140/90 mm Hg or less are in the normal range, and values of 160/95 mm Hg or more are in the hypertensive range (*1*). In societies of every sociocultural level, roughly 10 percent of adults, both men and women, may have blood pressure values of 160/95 mm Hg or more.

Although elevated blood pressure is often a sign without symptoms, it is far from being an irrelevant sign. Values even slightly higher than the usual ones are statistically associated with higher than average mortality rates. In fact, starting at low levels, there is a positive and continuous correlation between blood pressure and general mortality. Blood pressure is a graded characteristic, and the risk depends on the level of the pressure.

At the upper end of the hypertension scale, the hazards of high blood pressure become clinically obvious in the form of direct complications: hypertensive heart disease, hypertensive renal disease, retinal hemorrhage, and cerebral hemorrhage. Even at the lower end of the scale, persistent elevated blood pressure contributes to the development of atherosclerosis and to its main complications: ischemic heart disease and ischemic brain disease.

Population-based anatomical studies have shown impressive statistical correlations between both the degree and the extent of coronary atherosclerosis and the blood pressure observed during life. Several prospective epidemiologic studies have demonstrated the importance of elevated blood pressure as a risk factor in coronary heart disease, even when the pressure is only moderately elevated.

In a WHO epidemiologic study of 7,700 persons in seven cities—Prague (Czechoslovakia), Hisayama and Saku (Japan), Malmo (Sweden), and Moscow, Riga, and Ryazan (U.S.S.R.)—it was found that persons with blood pressure in the upper third of the frequency distribution had a 25 percent higher prevalence of coronary heart disease than those with pressures in the middle or lower third.

High blood pressure is largely an invisible disorder in the community, since only its direct complications are clinically apparent. However, epidemiologic inquiry reveals its true extent and its impact on the health of populations. Viewed in the light of its prevalence and its possible consequences, high blood pressure must be regarded as a widespread epidemic.

Advances in Hypertension Treatment

Only rarely can hypertension be cured by treating its cause. Treatment aims mainly at preventing complications, and the most reasonable approach is to reduce the blood pressure itself. During the past two decades, the development of several kinds of potent but relatively harmless hypotensive drugs has enabled long-term systematic treatment of hypertension. Between 1961 and 1970, the results of a number of studies demonstrated the effectiveness of such treatment for patients with more or less severely elevated blood pressure. The incidence rate of complications and death was lower in the treated than in the control groups.

The most significant investigation into long-term treatment was that of the U.S. Veterans Administration Cooperative Study Group on Anti-

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hypertensive Agents (*2, 3*). More than 500 hypertensive men, with diastolic blood pressures averaging 90 through 129 mm Hg, were randomly assigned to a placebo treatment group or an active treatment group. The study was conducted as a double-blind trial. After only 20 months of observation, a significant difference was seen in the incidence of complications between the treated and the placebo patients whose initial diastolic pressures averaged 115 through 129 mm Hg. After 3 more years of observation, it became evident that the prognosis for patients with initial diastolic pressures averaging 105 through 114 mm Hg also improved considerably with treatment. The benefit to patients with initial values averaging 90 through 104 mm Hg was less clear cut.

Community Surveys

In view of the high prevalence of hypertension, many persons in many populations should be eligible for treatment. Community surveys have shown, however, that only a fraction of those needing treatment are indeed treated. Moreover, only a fraction of the people treated receive systematic and efficacious treatment.

In a random sample of the population of Baldwin County, Ga., Wilber and Barrow (*4*) found that 42 percent of the hypertensives were unaware of their condition. Only 30 percent of the known hypertensives were under treatment, and only 15 percent of these persons were "under good control." Physicians lost track of 56 percent of the hypertensives within 3 months.

Caldwell and associates (*5*) studied the dropout problem in Detroit, Mich. They conducted a pilot study of social and emotional factors influencing the ability of patients to continue antihypertensive treatment. Only 11 percent of the patients first seen and treated for hypertension in 1961 were still under treatment 5 years later. A study of the dropout patients who were later hospitalized for emergency complications of hypertension revealed that one-third had given up treatment because they felt that they could not afford it. However, 24 percent had dropped out on the advice of their physicians; this clearly demonstrates the importance of educational programs for physicians. The most important factor was the lack of health education among the patients and their families.

Tibblin and Bengtsson (*6*) also noted a high prevalence of hypertension in a random sample of the population in Göteborg, Sweden. Among men, the number of untreated hypertensives exceeded the number under treatment by a factor of about 2.5, and half of those being treated with drugs had unsatisfactory blood pressure levels. Among women, the situation was considerably better.

The observations cited, as well as others, indicate that more action is needed for the control of hypertension in communities.

Control Programs

The term control is applied here in its widest sense. That is, it means the comprehensive struggle against a disease, including all aspects of health protection such as the prevention of the disease or of its complications, early diagnosis, appropriate treatment, rehabilitation, and health education. The concept also includes the endeavor to obtain more comprehensive knowledge of the condition, that is, of its natural history and epidemiology. A community program aims at protecting and promoting the health of a large number of people in a community—ideally, the whole community.

Before a community program can be established, reliable information is needed on the nature and extent of the disease, health care practice, and other factors concerning the particular community. Such information is necessary for planning a community control program and for establishing a baseline with which the changes induced by the control program can be compared. Data are also needed on the structure of the population and on other diseases prevailing in the area. When this information has been assimilated, a pilot program is undertaken to demonstrate the feasibility of the project and to determine the conditions under which it should be carried out and whether any adjustments will be necessary.

The WHO Project

WHO has initiated a series of pilot programs to determine the feasibility of controlling hypertension in communities and to show whether the positive protective effects that might be obtained outweigh any inconveniences to individual persons. The pilot programs are being organized within the framework of a cooperative international project. There are several reasons in favor of international cooperation in this field. Hypertension is a worldwide problem, and a

comparison of findings in various sociocultural settings—made possible by using a common methodology—could lead to specific modifications of the program according to local needs. Moreover, the pooling of observations from several program centers effectively increases the number of persons to be studied and thus shortens the observation time.

The need for large-scale control of hypertension according to an established program was formulated at a WHO meeting on the prevention of cerebrovascular diseases and the treatment and rehabilitation of patients with such diseases (7). The meeting was held in Monaco in 1970. Guidelines for programs and operating procedures for the international cooperative project were outlined at WHO meetings on community control of stroke and hypertension in Geneva in February 1971, in Göteborg, Sweden, in November 1971, and in Geneva in November 1972. (A limited numbr of copies of the reports of these meetings —documents CVD/71.3, CVD/72.1, and CVD/73.1a—are available from: Cardiovascular Diseases, World Health Organization, 1211 Geneva 27, Switzerland.)

At these meetings, investigators from program centers in the following 10 countries agreed on a common basic procedure for carrying out pilot control programs: Barbados, Finland (North Karelia), France (Lyons and Paris), Israel (Tel Aviv), Italy (surroundings of Verona), Japan (several centers), Mongolia (Ulan Bator), Nigeria (villages near Ibadan), Turkey (a rural area near Ankara), and the U.S.S.R. (the Tushino district of Moscow). Some programs—in Finland, France, Japan, Mongolia, and the U.S.S.R.—are already underway and others are in preparation. Hypertension control programs are also being carried out in some other somewhat similar centers in Belgium (Leuven), Sweden (Göteborg), and the United Kingdom (Boreham Wood). These centers are contributing to the joint project by exchange of information and experience.

The population groups to be studied vary widely. Some are occupational groups; others cover a defined general population or one of its strata. Some populations are urban and others are rural, and they live in countries having various levels of national income. Each occupational group comprises about 20,000 people, while the general population groups include communities of 30,000–100,000 people in defined areas. The pilot programs will cover a total of about 750,000 people.

The first step is to establish the prevalence of hypertension, the proportion of persons with previously known cases to those with previously unknown cases, and the number of hypertensives who have received regular medical care and the number who have not. It is equally important to discover why some cases of hypertension have not been detected and why some known hypertensives remain untreated. All members of the smaller groups, such as the occupational groups, as well as representative samples of the general population group, will be screened. It is expected that a total of about 130,000 people will be screened.

Baseline surveys will also be carried out in some reference communities without being followed by control programs. At the end of the pilot stage, in 5 years, a terminal survey in both project and reference communities should reveal any differences in the incidence of complications of hypertension (stroke, hypertensive heart disease with failure, renal failure), the incidence of coronary heart disease, the number of known hypertensive persons with and without left ventricular hypertrophy and organ damage, the prevalence of undiagnosed hypertension, and the general mortality.

The data for the baseline and terminal surveys will be obtained from regular mortality statistics, hospital statistics, stroke and myocardial infarction registries, and the terminal rescreening of another sample of the population. Information will also be gathered on the operation of the projects and the delivery of health care.

In view of the heterogeneity of the populations concerned and of the conditions in which the programs will be carried out, it may not always be possible to obtain a proper followup of the reference community. In such instances, only the question of feasibility will be answered, and that of efficacy will be left open. It is hoped, however, that a number of cooperating centers will be able to ascertain whether community control programs are useful as well as feasible.

Principles of Control

Hypertension is so frequent and so important a disorder that the general approach to its control must include (as in any large-scale epidemic) the management of whole communities as sociobiological entities in addition to the care of individual persons. For this purpose, both general

practitioners and the public should be mobilized. Concerted action is thus needed along three lines: general health education of the public, education of physicians, and better care for hypertensives (including timely diagnosis and appropriate treatment).

An important feature of control is the active followup of identified hypertensives. If a hypertensive person does not appear for a periodic examination, a health visitor inquires as to the reason for his absence. Annual examinations are carried out to provide the program center with detailed information on the progress of each hypertensive person.

A hypertension control program should be based primarily on available resources and conceived as a reinforcement and extension of existing activities. The close cooperation of general practitioners, whether private or salaried, with the program team should be secured whenever possible. There should be a hypertension clinic, operating under the responsibility of the program center, to advise the cooperating physicians—for instance, by carrying out special laboratory investigations. The center should also be responsible for data handling and analysis, research, and an information program for physicians.

Some Unresolved Questions

An important question is: At which level of blood pressure should treatment be started? So far, the only secure guidelines have been those obtained in the U.S. Veterans Administration study. The WHO project is not expected to provide an answer to this question. For the time being, decisions regarding the advisability and nature of drug treatment are left to the physician, who should take into account the patient's general health, not just his blood pressure readings. It is believed, however, that an active approach may less likely be wrong than a conservative one, and guidelines for therapy are being given to the cooperating physicians.

Another problem is that the communities to be studied cover a wide sociocultural range, and it is not yet known how a hypertension control program can be adapted to local conditions.

Expected Results from Pilot Programs

The initial baseline survey is assessing the extent of hypertension in various populations and the situation concerning its actual management, including any inadequacies and their causes. The pilot control programs should provide experience in the operation of large-scale projects for the control of a common, often symptomless condition. They should also show the best methods of operation in various sociocultural settings.

It should become clear whether therapeutic measures successfully applied to hospitalized patients can be broadly applied in general practice with equal success, and whether an organized program has advantages over medical care administered in the usual way. More insight into the natural history of hypertension should also be gained.

The WHO project is expected to last for 5 years. If a pilot program proves successful in a particular area, it should be continued as a model program and expanded to cover a larger population. It should also be integrated with control programs for other cardiovascular diseases, such as stroke and myocardial infarction. The ultimate aim is a comprehensive program for the control of cardiovascular diseases, and perhaps other chronic diseases, in entire populations.

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