WORLD HEALTH ORGANIZATION
REGIONAL OFFICE
FOR THE EASTERN MEDITERRANEAN

ORGANISATION MONDIALE DE LA SANTE
BUREAU REGIONAL
POUR LA MEDITERRANEE ORIENTALE

SEMINAR ON THE PREVENTION OF MAJOR CARDIOVASCULAR DISEASES

EM/PRV.MJ.CARD.VSC.DIS/15

Teheran, 10 - 17 December 1972

ENGLISH AND FRENCH

HYPERTENSION IN GENERAL

by

Dr. Paul Milliez*
WHO Temporary Adviser

Arterial hypertension unquestionably deserves to attract the attention of the public authorities, physicians and men in general, in view of its very important role in the genesis of atheromatous cardiovascular diseases.

It is a known fact that in most civilized countries, mortality by cancer reaches 18 % whilst cardiovasculorenal diseases are responsible for 47 % of causes of death.

Arterial hypertension is most frequent in subjects suffering from atherosclerosis. One cannot however say, at least for the time being, whether there is concomitance or a relation between them. What can be asserted with certainty is that in man there is significant arterial hypertension in 50 % of infarction cases. In women, the

---

*Professor of Medical Clinic, Hôpital Broussais, Paris 8e

EMRO/72/1633

proportion reaches 76 % and what is most remarkable arterial hypertension is discovered more frequently in coronary patients when the patient is younger. Cases of myocardic infarction without hypertension are observed under 40 years only in 2 % of the patients. That is the reason for which this disease which is discussed here must be thoroughly known.

Arterial hypertension commonly appears between 25 and 30 years of age. It may be at first a borderline arterial hypertension, more seldom it is a labile hypertension. It is essentially in that case a discovery during systematic examinations. Nothing could foretell, before measuring the blood pressure, the presence of a pathological rise except for a certain degree of nervousness, or sometimes a vascular erethism. This hypertension even if of no consequence, even if labile, is of an obvious interest, as even in these patients, the incidence of arterial thrombosis is significantly higher than in healthy subjects.

The fact remains that in presence of a rise in blood pressure one must immediately investigate its functional repercussion in the three privileged spheres of the organism viz.:

In the encephalo-retinal system, the manifestation of arterial hypertension may be constituted by cephalea, often true hemicrania or migraine, which are mistaken by the physician or the patient for the, manifestation of a liver inadequacy. One must specify the rhythm of

the headache, its seat and intensity, its gravative or pulsatory character, time of evolution, method used to soothe it. Occipital sephaleas seem of a more gloomy prognosis than frontal cephaleas. One should also examine whether the patient is using antalgics including high doses of phenacetin.

Floating black spots (muscae volitantes) - a point which we shall not develop as we have in the past adequately emphasized it - are not a specific sign of arterial hypertension, as they may be observed in short-sighted persons and persons suffering from colitis although they are often contemporaneous with the onset of hypertensive angiopathy.

It is also important to specify the presence of giddiness, ear buzziness or wheezing. A strange phenomenon to point out is that Ménière's disease (auditory vertigo) is often found at the onset of arterial hypertension and will recur only many decades afterwards.

One should take the opportunity of this survey in this sphere to ask the patient whether he has from time to time epistaxis.

In the field of the pulmonary circulation of blood one should carefully look for dyspnea of effort which can easily be measured in an urban environment by the number of flights of stairs. The patient should also be requested whether during the effort he suffers from retro-sternal, epigastric or epitrochlean pains. One should keep in mind that very frequently an aerophagy of effort is a coronary equivalent or at least a sign of bad sub-diaphragmatic arterial circulation.

On the occasion of this questionnaire the presence or absence of intermittent claudication of the inferior limbs should be investigated.

The impaired renal function can be ascertained by one question only. is the patient obliged to wake up during the night to urinate, whilst he has no sign of enlarged prostate, nor fibroma and that he is not induced by sleeplessness to relieve his bladder in order to recover his sleep again?

This quick questionnaire is completed by an assessment of the patient's personal and family medical history.

In his personal medical events the following points are investigated:

- late night enuresis
- unexplained fever in childhoold
- repeated cystitis
- acute rheumatic fever
- acute or subacute glomerulopathy
- tubulopathy
- isolated proteinuria
- nephrocolic attacks, or
- gout attacks which the patient forgets when he tries to remember his previous misfortunes.

As for women, one should insist on the course of the pregnancies, on the absence or presence of proteinuria, of hypertension, of an

excessive weight increase, urinary infection during the period of pregnancy, on the weights of the children at birth: an infant of less than 2 kilos and a half is an almost positive indication that angiopathy was already present at the time of pregnancy; on the other hand an infant whose weight exceeds 4 kilogrammes must always be considered as a suspicion of an ignored diabetes.

As for family history, note should be taken, without too much insistance, of the age at death of the parents and brothers and sisters, especially when the cause of their death is associated with cerebral hemorrhage or a myocardial infarction. This is an important factor and its predictive value should not be overlooked.

When this questionnaire is ended, the patient's mode of life and his habits and his behaviour should be investigated.

The profession may also play a predominant role.

The regular use of liquorice, of contraceptive pills, may be responsible for the onset or the aggravation of an angiopathy.

An excessive consumption of salt, and poisoning by tobacco, play also unquestionably an aggravating role.

One must chiefly try to define accurately the symptoms which may advocate in favour of a surgically curable etiology.

Thus, rises of tension felt, very abundant sweating compelling the patient to change his linen, a Recklinghausen neurofibromatosis, a diabetes without family history, lead to suggest a pheochromocytome.

Polydipsia, persistant constipation, pseudoparalysis, tetany attacks must lead to research for a Conn syndrome.

A lumbar traumatism, hematurias with clots, nephrocolics without stone evacuation are a suspicion that a renal arterial lesion is present.

The same occurs when one hears of an individual with a normal blood pressure carrying an arteritis who suddenly has an onset of hypertension.

Repeated urinary infections, active or passive reflux pain, a polydipsia, nocturnal enuresis, suggest a reflux, a disease of the cervix vesicae.

An evolutive glomerulopathy is to be feared in the presence of an old permanent proteinuria.

Arterial hypertension may also appear during the progress or the decline of renal tuberculosis.

When the questionnaire is terminated, the patient is examined. The examination must be exhaustive and include the measurement of blood pressure at both arms at the first examination, in a recumbent position, then while standing and afterwards after an effort of ten flexions of the lower limbs.

In the successive examinations, blood pressure shall always be measured at the same arm.

In an adult, a pressure higher than 140-90 is always a pathological sign when it is regularly found. There is no clear-cut limit to the pathological pressure and it is a well known fact now that the life expectancy of a person is directly proportional to his blood pressure levels. A man whose pressure is 100-60 has more chances to live to an old age than a man whose pressure is 120-80 who in his turn will live older than a man with a 140-90 pressure.

The clinical examination should also include palpation of the arteries of the lower limbs, the upper limbs and the neck.

The epigastrium and the lumbar fossa, the iliac fossa, the sides, Scarpa's triangle, the carotids and the supra-clavicular cavum should be examined by auscultation.

The physician should be able to examine rapidly the fundus oculi, and then prescribe the examinations required. These are variable according to the nature of the eyesight troubles found.

In an individual without important functional perturbations it is not always certain that an electrocardiogram is needed, but it is advisable, while taking all the time necessary, to ask for a garrotless kaliemia, a creatininemia, a uricemia, a total cholesterol, triglycerides, a test for albumin and sugar in 24-hour urines, the V.M.A. rate, and, if possible, an Addis count test.

Very rich nations have given up systematic urography. In our opinion, we continue practising it in the form of a timed urography

without compression, at the rate of one per minute during the first five minutes, in order to find out a sized or excretion asymmetry as the involved kidney may appear smaller or show a delayed excretion of the contrast medium. In such a case urography should be completed by an urea rinsing (50 ml in 200 ml of serum)to ascertain whether in confirmation of the first impression a "more accurate picture" of the affected side is discovered, linked with the delayed evacuation of the iodized substance.

These examinations are quite adequate unless abnormalities are detected.

The detection of a high V.M.A. may lead to carrying out either a regitine test or a histamine test, but chiefly to renew the vanylmandelic acid dose and practise anarteriography to determine the site of the lesion.

A kaliemia under 3 mEq 5 (milliequivalent) whilst the individual does not absorb liquorice and is not subjected to salidiuretics, should lead to the determination of the blood sodium and bicarbonates rates, and the determination of the sodium and potassium rates in the urine, the presence of a natremia and alkali reserve associated with a kaliuria over 40 mEq by litre in case of hypotaliemia, must lead to the determination of plasmatic aldosterone rate or else the appreciation of the 24-hour urinary tetra-hydro-aldosterone rate followed by a systematic test of the action of a sufficient dose of spironolactone (an average

of 300 mgr during three weeks). The reverting of the pressure to the normal in these conditions especially when the biological examinations are positive, leads to suggest a Conn syndrome.

In the case of a secretion asymmetry shown by the timed I.V.U. (intravenous urography), arteriography should be prescribed as it may disclose unilateral or bilateral lesions of the renal arteries or confirm the presence of a unilateral parenchymatous attack. In the latter case it is advisable to complete the investigation by scintigraphy with mercury bichloride not only to appreciate the value of the affected kidney but mainly to appreciate the quality of the supposed healthy kidney.

All this questionnaire and these investigations do not lead to detecting the surgically curable cause of hypertension, except in a very restricted number of cases.

In a highly specialized French service, one finds out of 100 in-patients one case of pheochromocytoma, two cases of Conn syndrome, one case of liquorice intoxication, four lesions of the renal artery, two of which are curable, three cases of interstitial nephritis (reflux, lithiasis, tuberculosis).

In a nephrology unit, forty-five cases of hypertension are carrying glomerulopathy. But it is obvious that these proportions are inaccurate as only those individuals suffering from high hypertension or those whose symptomatology made it possible a probable etiological diagnosis are hospitalized in the specialized services.

When no cause is found or when it is eventually not curable surgically - and this represents approximately 99 % of arterial hypertension cases in common medical practice - one must be satisfied with a medical treatment in view of the tremendous advances it has accomplished in the course of recent years.

The diet should be sodiumless and poor in lipids, sometimes restricted in carbohydrates. The patient should break off smoking, absorbing liquorice or contraceptive pills. As far as possible, he should also avoid taking aspirin with a high phenacetin content.

The patient should lead a healthy life avoiding violent physical exertion, especially after meals, but should take up a moderate sporting activity. Diving and bathing in cold water are forbidden.

Drugs are variable according to the authors, but in the course of these last years they became particularly efficacious.

One may start by using salidiuretics associated with potassium salts or spironolactones. If the latter are insufficient as this frequently occurs for regularizing the blood pressure, they at least bring a mordanting which renders efficacious all other antihypertensive drugs which are added to salidiuretics, spironolactones at progressively increasing doses and in association, as one or the other of these drugs may act on different points of impact.

Thus one may give successively, afterwards at the same time, two to three tablets of Alpha-methylopa, two tablets of guanethidine, two tablets of hydralazine, one or two tablets of reserpin, one or two tablets of clonidin and sometimes merely a beta-blocking agent if the patient does not suffer from asthma or if he has no bundle branch block.

Unfortunately one is often compelled to associate other drugs with those already indicated. Thus in the presence of a spontaneous or induced by salidiuretics hyperuricemia, anti-uric drugs are added. As for example in the presence of hypercholesterolemia, hypolipeniants are resorted to.

Life for the patient becomes complicated as the associated drugs are too numerous. The patient gets depressed and tired, so much the more as inability and gynecomastia may increase his discomfort.

The fact remains that at the present time, thanks to modern therapies, the life expectancy of an individual suffering from hypertension tends to approximate more and more to the life expectancy of an individual having a normal blood pressure.

As for us, we find that in 1960 all our subjects suffering from malignant hypertension were dying in the proportion of 100 % within five years at most following the onset of "malignancy". Nowadays, after five years, 55 % of our sick are still alive and this proportion

of survival without functional disorders and with a blood pressure nearer to the normal than before, is an encouraging forecast for the future, except for the relatively high frequency of coronary accidents, although often minor, in patients whose arterial hypertension has been gradually regularized.

To conclude, one must act cautiously in the case of arterial hypertension, as unquestionably there is - during angiopathies associated with hypertension - an important psychosomatic factor. The role of the observers and observed is essential and our means of appreciation are only crude.

We do not know as yet accurately the weight to be ascribed to the various functional signs. We ignore the value of symptoms so-called objective such as the measurement of the blood pressure and the examination of the fundus oculi. We cannot calculate the role of environment, of psychological factors both on the part of the physician and on the part of his patients.

Most certainly the double-blind method affords a means to appreciate the appropriateness of a therapy, but in order to be valid it should be based on a long duration experimentation where also the secondary and tertiary effects of the medications should be appreciated.

It is as yet impossible to know the consequences of dietetic infringements, of the reversal of the patients to their toxic habits,

of the action of associated medications so-called anodyne to which the patient may resort according to his idea that the anti-hypertensive therapy appears to him favourable, unfavourable or of no value.

At least for the time being the world-wide studies have put forward some unquestionable notions:

a) Are now clearly established:

- the essential role of the blood pressure levels even physiological, on the life-span of each individual;
- the very high frequency of arterial hypertension;
- the usual presence of atheromatosis in individuals suffering from high blood pressure over long periods;
- the unusual percentages of arterial hypertension in individuals suffering from atheromatosis;
- the favourable action of the various anti-hypertensive therapies on life expectancy in individuals suffering from high blood pressure, on the frequency of cerebral and renal complications;
- the inefficacy of anti-hypertensive therapies on the frequency of coronary accidents.

b) Further research is needed on:

- the true relationship between arterial hypertension and atherosclerosis;
- the role of the drop of blood pressure due to treatments on the development of some vascular thrombosis;

- the preventive or inducing action of certain dietetic and therapeutic prescriptions, of certain intoxications, of certain modes of life on arterial hypertension as well as on atheromatosis;
- the secondary or tertiary effects of the therapeutic remedies at our disposal on the carbohydrated and uric metabolism, the renal function, the endocrine glands and psychism;
- heredity in essential arterial hypertension;
- the effects of new drugs.

c) It goes without saying that the day when the therapy of hypertension - whether symptomatic or etiologic - will really exist, the double-blind statistical method will no longer have any justification although systematical research on prevention and epidemiology remain valid and cannot be carried through successfully, unless all arterial hypertension specialists, whatever may be their discipline, their level and their country, with the assistance of the great medico-social administrations, will accept to adhere to a hard and fast long-term and anonymous scheme. In this field, only conscience, patience and time lead to fruitful results. This is easy to write, difficult to apply.