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ESSENTIAL HYPERTENSION*

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The question of high blood pressure today is such a common-place clinical entity among laymen, that patients ask about their blood pressure as they do about the condition of their heart and lungs. It is obvious that as medical men, we should know more about the condition other than that the pressure is too high or too low. I want to present a form of high pressure described by Sir Clifford Allbutt many years ago. He called it hyperpiesia, the name implying the presence of high blood pressure without any apparent cause. It is interesting to note that since the first description of this disease, the etiological factors are still unknown, though we have gained some knowledge regarding predisposing factors, course, treatment and prognosis which necessarily caused to be discarded certain old and popular ideas.

I am presenting this type of hypertension as a definite clinical entity, separate from the high tension associated with diseases of the heart, kidney and hyperthyroidism.

The factors having to do with arterial tension, are the force of the heart beat and the peripheral resistance affected by the arterioles. The arterioles we know are innervated by the vasomotor center in the medulla and spinal cord. It is upon this fact, that the peripheral resistance is the chief factor in the production of hypertension, and that the force of the heart is secondary to it; that Major has advanced the theory that there might be some substance in the body acting on the muscle walls of small blood vessels, or on the vasomotor centers. These bodies may be in excess of what is normal, or may be themselves normal.

The effects of non-protein nitrogen have been studied and while creatinine and creatin have appeared inert, certain derivatives and closely allied substances have shown marked pressor effects. Methyl guanidine compounds when injected in-

travenously in dogs have produced marked rise in blood pressure. In man somewhat similar results have been obtained. Major and Weber, who have done most of this work, have also observed clinically that certain few cases of essential hypertension showed a decrease of guanidine in the urine, and in two cases suffering from hypertension in which there was a marked decrease in pressure, the excretion of guanidine was increased. In order to prove that this substance is responsible for essential hypertension, it must be shown to be in excess and that in all cases of this form of hypertension the excess should be demonstrated. The quantitative determination of guanidine in the blood is very difficult and further investigation on this theory has been retarded.

Anrep and Starling have found a constant relationship between arteriosclerosis of the vessels of the medulla and essential hypertension, which might be evidence of actual pathology in the centers themselves. These results represent the most direct investigation on the subject, and though they are not conclusive I feel assured that further work along this line is, to say the least, justifiable. Heredity, mental strain and endocrine disturbances are factors in the consideration of these cases which we cannot easily overlook.

The clinical recognition of a case of essential hypertension is more often than not, incidental to a general examination. Dr. Gager of the Cornell Clinic, has reported two thousand patients equally divided between the sexes who were studied consecutively on admission to the general medical clinic. With the exception of a very small proportion (less than 5%) who came directly for blood pressure, the complaints and symptoms were those of arthritis, the usual gastro intestinal ailments and the various circulatory and metabolic diseases. The symptoms of the disease are practically nil; some of these patients will boast of not having been sick a day in their lives. There might be, however, a history of headache, dizzy spells

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and sometimes nose bleed. The diastolic pressure is usually one hundred or more, the systolic one hundred and fifty to two hundred. More often than not the eye grounds, heart and kidney are found to be negative.

The question of treatment in these cases is one of the most perplexing the general practitioner has to face. In the light of our present knowledge, we are obliged to regard with uncertainty the use of some of our old and popular remedies. No treatment should be considered without first going into the habits, social life and type of work of these patients. It has been my experience that great benefits have been derived from a practical and common sense adjustment of these factors.

The idea of a low protein diet has been passed on from generation to generation in the treatment of all forms of hypertension. Observations made on the people of the far north whose diet is practically all protein and fat, show on the average a relatively lower blood pressure than other groups, and the type of hypertension which we have under consideration is hardly ever seen. Cadbury, Foster, and Harris, of the Sun Life Insurance Co., in China, have also reported the same low average blood pressure and the almost total absence of hypertension in the Chinese whose diet we know to be low in protein. The observation of Strouse, Kelman and Mosenthal on protein diet gives us the evidence that blood pressure is very little if at all affected by diet, and that the low pressure in the Oriental is not so much the result of a low protein diet as it is the result of a slow, unemotional temperament. Mosenthal has shown that 50 to 150 gms. of protein can be given to a hypertensive patient without any change in pressure. It has also been observed that in patients with hypertension and slight or no renal impairment, marked variations in blood pressure occur; such variations having no relation to the intake of protein food. In these cases there was no damage to renal function and no increase in non-protein nitrogen or urea nitrogen of the blood, though 150 gms. of protein had been given daily. In cases of frank progressive nephritis with hypertension a diminution of protein intake sufficiently marked to lower the non-protein nitrogen and urea of the blood, did not cause a lowering of the blood pressure. It would appear then that variations of blood pressure are direct results of vasomotor disturbances from some source other than protein food.

Dr. Eugene Fish, in an analysis of 17,000 cases examined under the auspices of the New York Life Extension Institute observed that while he found no preponderance of hypertension among smokers or those on a high protein diet, he did find in a group of 2,145 overweight patients hypertension in

14.9 per cent contrasted with only 6 per cent in a group of persons of normal weight. It was not uncommon, he noted, to find a fall in blood pressure one millimeter per pound as the weight came down by diet and exercise.

The Presbyterian Hospital in New York City has reported some success from the elimination of chlorides from the diet; this is based on the chemistry of a calcium chloride balance between the cells of the blood and the plasma. It remains to be seen, however, whether such a dietary regime is justified by the result obtained especially when we consider the unsavory kind of a meal it imposes on the patient.

The problem of drug therapy necessarily comes up, and from the very number of drugs used in this particular disease, we are led to doubt the therapeutic integrity of most of them. Sodium iodide has been used the world over in the treatment of many diseases, and particularly in hypertension, but nowhere can there be found any supporting evidence of actual benefits obtained from this drug in this form of hypertension. In cases of marked nervousness and insomnia, chloral hydrate, luminal and barbital $\frac{1}{2}$ to 5 grains t.i.d. may be used with some good results. From our experience at the Harlem Hospital, the nitrites seem to give the best palliative results from their action as vasodilators. Erythrol tetranitrate, amyl nitrite like nitroglycerine when administered will temporarily reduce blood pressure, but the resultant headache is always a source of much discomfort. In cases with symptoms and a systolic reading over 180, we give routinely sodium nitrite in half grain doses t.i.d. and get a fall in pressure from 10 to 25 millimeters which makes the patient feel more comfortable. I have used potassium sulphocyanate grs. lss in aqueous solution t.i.d. according to the Cornell Clinic, i.e., t.i.d. for the first week, then twice daily for the second week, and once daily thereafter. All of the five cases showed a reduction in pressure of from 5 to 20 millimeters while taking the drug; one case developed a severe gastric upset.

Ralph and Major have found that certain liver extracts have marked depressor effect which is probably due to the presence of histamine or peptone. The results of these experiments are not sufficiently conclusive for me to make more than a brief mention of the possible use of liver extract in the treatment of essential hypertension. Care of the emunctories, exercise and freedom from great mental strain are simple but very helpful measures in all cases.

The course and sequelae of essential vascular hypertension will be determined by the organ inferiority of the individual, which inferiority is

determined by heredity, previous infection and mental strain. Dr. James E. Paullin's review of 76 cases of essential hypertension over a period of five to seventeen years, shows the number of cases equally divided between the sexes. The mortality for the male was 48.7%, and for the female, 9.2%. Myocardial failure occurred earlier than hemorrhage; renal involvement was usually slight, only one death occurring from kidney disease. Half of these cases in the female occurred at the menopause which leads us to suspect either that the etiological factor is different and not so important in the female, or that the rise in blood pressure which we see at the climacteric is not the true essential hypertension, but just one of the symptoms of disturbed ovarian function.

Removal of the influences which tend to produce this high pressure when possible, and at a time when the arteriole tree still retains its elasticity, will result in a return toward normal blood pressure without any damage to the tissues. The fundamental property of heart muscle is its ability to recuperate when given time to relax, hence it must have rest to insure efficiency. This cannot occur in hypertension because of the great force the heart must exert to keep up the circulation and to overcome the resistance offered by the semilunar valves due to the correspondingly high diastolic pressure. A condition such as this must result sooner or later in heart failure and its associated symptoms. Uncontrolled cases of essential hypertension finally result in fixation of the arteriole tree with narrowed lumen due either to the irremovability of pressor agencies, loss of elasticity or sclerotic processes.

Conclusions

1. Routine blood pressure readings should be done on all patients, in order that help if needed may come at a time when it will do the most good.
2. The wholesale relegation of patients to distasteful and unbalanced diets which seem to do little, only adds further to their mental anxiety.
3. Attention to the business and social life of these patients, may give leads toward helpful suggestions.
4. The use of drugs has its place in selected cases. The nitrites seem the most helpful when indicated.
5. Continued high pressure will, if allowed to go on, affect other vital organs, especially the heart. Care should be exercised to watch and protect these organs as far as is possible.

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Discussion on "Essential Hypertension"

Dr. E. Rawlins, of New York City, N.Y. (complimented the speaker.) "Strict attention must be given to this class of hypertension. The only essential point I could discover that was brought out by Dr. Brown was the hypertension that is found in the females. I would like to know if the dysfunction of endocrine glands have not something to do with this kind of trouble in the females. In many instances of hypertension I have found that the prostate gland was somewhat enlarged in the male. I believe there is some psychological or emotional disturbances in patients without pathological findings. I would like to know more about endocrine dysfunction in these cases."

Dr. J. B. Davis, of North Carolina, (complimented the speaker.) "I know there are a number of physicians who could not make a proper blood pressure reading. This is discovered from patients who have come under my observation from time to time. I can remember two patients now who have a blood pressure of 210 systolic or over and are getting on well, active in life, and showing no sign of impending danger. Endocrine dysfunction was discovered in a young girl with nephritis, who had suffered menstrual disturbances for some time and who had hypertension."

Dr. J. B. Hall, of Boston, Mass: "I congratulate the speaker for two reasons: first, on the emphasis of hypertension as brought out in the paper, and secondly, it is a subject which is often overlooked

by many of us. I think hypertension is a serious condition in any one, and persons so afflicted should receive proper instruction so they may look out for encroaching danger."

Dr. Linsford, of Rochester, N.Y.: "There may be some physicians who are unable to make a definite diagnosis as to the cause of hypertension. I believe it has a definite cause, and it should be looked for. Even if the liver, heart and kidney were found to be normal upon examination, that definite cause should always be searched for carefully."

Dr. McCurdy, of Boston, Mass.: "Hypertension is sometimes puzzling to everybody. There is a definite cause for everything that presents itself to the physicians. Even if the essential cause in every case was not clearly definite, the patient should have a specific advice as to rest, especially mental rest, which is very important. Dieting, proper elimination, change of scenery and prevention of overcrowding are some of the important things every patient suffering with hypertension should know and practice."

Dr. Whitby, of Washington, D.C.: "I would like to know the cause of hypertension, whether functional, emotional or in the endocrine dysfunction.

I know of a case that was brought on from nervous depression, which was relieved under proper surroundings and physical treatment."

Dr. W. S. Grant, of Chicago, Ill.: "I have made some observations in cases of so called essential hypertension and have found that in some instances cases which I considered at the time to be an essential hypertension later proved to be nephritis. When we *fail* to demonstrate the cause for high blood pressure, we should treat the case as a potential nephritic and then give the subsequent knowledge of approaching danger, make a Wasserman test, and keep the patient under close observation."

In conclusion, Dr. Brown thanked those who entered into the discussion, and cited many valuable and interesting things they said in the discussion of cases in his practice, as well as shown in the paper. He said that he did not want them to go away with the understanding that hypertension was not a serious condition, and many cases should be made to come to a physician once a month or more for examination and observation. The physician should tell them about the incoming danger and teach them to do the things that would prolong their lives.

THE CONSERVATION OF NEGRO INFANT LIFE*

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The world's work and its progress depends for success on the adults; adults are infants fully developed, so the conservation of infant life ought to hold a large place in the minds of those interested in world progress.

Needless to say, a consideration of this subject will entail the use of much statistical data. We will try to spare you this ordeal, which according to the learned Shakespeare "is flat, stale and unprofitable," by briefly quoting as few of them as possible. Any one who wishes to pursue the subject further may be aided by use of the references accompanying this paper.

Infant mortality is to the health officer what the clinical thermometer is to the physician. People who will not take care of their offspring will not take care of themselves. There may be extenuating circumstances to account for a large death rate but the attention and care used toward its reduction is an indication of the intelligence of the people.

Infant mortality is the calendar ratio between

births and deaths of individuals from birth to one year of age.

Whipple states, that the mortality rate is higher in the first week of life than after six months; in fact in one of the statistical years studied 187,000 babies died before reaching one year of age—98,000 of them within their first month. In Boston during the year 1919 there were 1818 infant deaths as follows:

Age	No. deaths	Rate
One day old	298	29.3 per day
2 days old	65	32.5 " "
1 week old	122	17.5 " "
2 weeks old	69	9.8 " "
1 month old	156	5.2 " "
2 months old	131	4.2 " "
6 months old	206	2.2 " "

A progressive diminution of deaths per day is shown here as the age of the infant increases. There are also a number of reasons for infant deaths other than their tender years. The care of the young is an obligation which ought to occupy the entire attention of the parents, at least of one of them, until such time as it can shift for itself. Correct environmental conditions and personal anxiety for its welfare are especially necessary.

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