

The Practice of Medicine in China and New England with Observations on Hypertension

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IN comparing the diseases of China with those of America as seen in a large hospital and dispensary practice there, and in a hospital and private practice in New England, I have been impressed by a number of contrasts.

1. The great importance of parasitic disease there and its relative unimportance here. In the Hunan-Yale Hospital¹, during the period 1925-1926, there were 5,789 urine examinations and 3,128 feces examinations out of a total of 14,002 total tests, and between 70 and 80% of the feces showed some type of intestinal parasite, chiefly ascaris, trichuris, amoeba or schistosoma. Examination of the stool was as important as that of the blood or urine. In the Waterbury Hospital² for the three years (1926 to 1929) there were reported 12,122 to 13,112 urine examinations per year, and only 131 to 176 feces examinations out of a total of about 25,400 total laboratory tests per year.

2. The extraordinary amount of tuberculosis in China. At least 20% of all medical patients in the dispensary and in the medical in-patients had some form of tuberculosis. Seven per cent. of 1,800 students examined gave a history of hemoptysis. In New England it is becoming comparatively rare. In only 3% of my office cases has tuberculosis been diagnosed or suspected.

3. The great prevalence of intestinal infections in China: typhoid, bacillary, and amebic

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dysentery and cholera. In this country there are now practically none, unless one includes cases of colitis.

4. Certain deficiency diseases, namely beriberi, osteomalacia, sprue and other tropical diseases such as leprosy, kala-azar, schistosomiasis, malaria, etc., are common in China but are practically unknown in New England.

5. Tumors and malignant disease seemed quite general there because the growths had been allowed to grow unchecked, so that one could seldom go through the city streets without encountering several persons afflicted with visible tumors.

6. Smallpox is a constant menace in China and is excessively rare in this country.

A large number of conditions were seen in China with about the same frequency as in New England. The venereal diseases, gonorrhea and syphilis, appeared in the same form, with the same complications, were contracted in the same manner, and were the cause of as much suffering. Peptic ulcer was common, and presented the typical symptoms. Cholecystitis, cholelithiasis and cholangitis were also common.

Acute rheumatic fever was very rare in my experience, but rheumatic and syphilitic heart disease, generally in the later stages, with hypertrophy, auricular fibrillation and heart failure, was common. Hemoptysis due to mitral stenosis was rather frequent. Acute and chronic nephritis, especially of the glomerular type, were rather usual, but the chronic interstitial type was much less so. Cirrhosis of the liver was frequent; 2% of our hospital medical inpatients had ascites, the most striking examples of which were due to the cirrhosis of schistosomiasis. Neuroses and psychoses were seen with about the same frequency as in this country.

Other conditions now seem conspicuous by

their absence or infrequency. True pernicious anemia we did not see, although secondary anemias were frequently encountered. Dental caries was relatively much less frequent. Chronic arthritis was not common, and allergic hay-fever and asthma uncommon. I do not recall a single case of angina pectoris among the Chinese and only one Chinese with essential hypertension.

Hypertension has been the one most impressive feature of my practice in Waterbury. Of office records in 1200 adult patients 200 or 16.6% have had a diagnosis of hypertension (blood pressure of 150 systolic or over), with or without some other conditions such as obesity, hypothyroidism, cardiac disease, chronic nephritis, arteriosclerosis, etc. One hundred and sixty-seven (13.8%) had blood pressure of 160 or over, and 63 with blood pressure 200 or over. Among 4,000 Chinese patients in the Medical service in the Hunan-Yale Hospital, over a period of four years, we found less than 20 with a blood pressure of 160 or over. In two years at the Peter Bent Brigham Hospital³ in Boston (1918-1919) out of 4,940 medical patients 382 had hypertension. Gager⁴ from the Cornell Clinic, in 2000 routine cases of men and women, reported 15% of men and 16.9% of women with systolic blood pressure over 140 in those below 40 years of age and over 150 in those 50 years of age. Donnison⁵ has reported a similar striking absence of high blood pressure and cardiorenal disease among the Africans.

Is it not possible that in this striking infrequency of angina and hypertension among the Chinese some clue as to the etiology of these two most important cardiovascular diseases may be found? Hypertension has been studied intensively from all angles and written about profusely. The *Quarterly Cumulative Index Medi-*

cus for 1927, 1928 and 1929 lists over 292 published articles on "High Blood Pressure." The more one reads, the more is one confused in the maze of conflicting theories as to the cause of hypertension. Arteriosclerosis is regarded by some as the cause and by others as the result of increased pressure. Nephritis is thought to be a common cause but is also regarded as the result.

Among the causes mentioned are:

(1) *Physical*—diminution of the arterial bed as in arteriosclerosis.

(2) *Chemical*—as in perverted metabolism, salt, or protein retention, chronic lead or arsenical poisoning.

(3) *Mental*—anger, fear, excitement and other emotions, acting perhaps indirectly by hormones, an emotional hypertension. Some state that derangement of the autonomic system is responsible for many cases; others, that the autonomic system is not concerned in the etiology of high blood pressure, but mental stress is accepted as one of the main etiologic factors.

(4) *Endocrine imbalance* of the adrenal, thyroid and pituitary glands and ovaries has been brought forward as responsible for certain types of hypertension.

(5) *Focal infection* and *chronic sepsis* may cause hypertension.

Classification is generally unsatisfactory. Essential hypertension, or hyperpiesis, as opposed to the hypertension of cardiorenal disease, still is not based on etiology.

In 1927, I published the results of a study of blood pressures in a group of Americans in China⁶. In comparing them with records of blood pressure of the local Chinese I found that:

(1) The blood pressure of the Chinese was lower than the accepted averages for Western

countries (systolic average 110), and that hypertension was rare.

(2) That the blood pressure of a series of Occidentals living in China was about the same as that of the Chinese, and that the blood pressure of the majority of persons studied was lower in China than in America. A similar report was made by Tung⁷ from Peking shortly after.

An attempt was made to analyze some of the theories that had been suggested from time to time to explain the low blood pressure of the Chinese, such as:

(1) The smaller statures and lighter weight of the Chinese.

(2) Diminished capacity for muscular effort; a decrease in muscular tone.

(3) Racial endocrine differences.

(4) Largely vegetable diet, low in protein and salt.

(5) Climate which lowers vasomotor tone.

(6) The simplicity of life and absence of nervous strain in China.

The first five do not seem tenable when checked with actual conditions and with the foreigners studied, although Mills⁸ claims that the low blood pressure is due to hypoadrenalism. Tropical climate has been shown to cause a lower basal metabolism⁹ and 67 naval officers studied by Roddis and Cooper¹⁰ in temperate and tropic zones showed a lowering of blood pressure when in the latter. The climate of China, and especially in the northern half, is far from tropical.

The question was raised, could there not be some subconscious adjustment to the unhurried life of the East?

The latter point has been elaborated rather fully by Dr. W. H. Houston¹¹ (my senior colleague in the Medical Service in Changsha).

He was impressed, after his return to practice in the United States, by the great frequency of the functional neuroses, particularly of the spasmodic type, cardiac anginas and spasms of the oesophagus, pylorus, colon, bladder, ureters, and blood vessels, as compared with an almost complete absence of these among the Chinese.

He spoke of the "spasmogenic aptitude", a hypersensitiveness to stimuli of the vegetative nervous system, a sort of syndrome, rather than a clinical entity; a constitutional defect in which in individuals, a slight stimulus of neurogenic origin will suffice to excite the spasm with its characteristic pain.

Dr. Houston reviewed the characteristics of the Chinese in the light of the above and could find nothing in the diet, climate or endocrine system to account for any difference. Instead of finding the Chinese the serene, placid, peace-loving, or the cold-blooded, self-contained character of fiction, he discovered them to be the most neurotic persons in the world but with neuroses of the anxiety type, flaccid rather than spasmodic. Instead of finding the Chinese calm (and calm has been claimed as the only remedy for essential hypertension by Mosen-thal), he found them highly excitable, noisy, and delighting in din and stir. As he puts it, "A Chinese expressed the fundamental distinction between Chinese and Occidental psychology by saying that the Occidental, when meeting with a difficulty, tries to remove it, making a change in the external environment, an external adjustment. The Chinese finds it easier to make an internal adjustment, to change his soul to an attitude of acceptance. When the axle on the wheelbarrow squeaks and squeals, we grease it. The Chinese wheelbarrows are never greased; they can be heard a mile away. We say the screeching is intolerable; they accept it. If we stay in China long enough, we (most of

us) learn to accept things, and our normal systolic pressure becomes, as the Chinese is, about 100. If the Chinese live in America long enough, they learn our habit of protest and non-acceptance, and their normal blood pressure rises to our level."

In many points this conception of Dr. Houston's is similar to what Jacobsen¹² of Chicago calls neuromuscular hypertension or nervous hypertension, a condition of reflex hyperexcitability, which is often present in so-called neurasthenia, but is present also along with many disease conditions. It may be the result of prolonged pain or distress, emotional disturbances such as fright, loss or bereavement, bacterial infection, trauma of all kinds, chronic nervous strain and possibly congenital defects of the nervous system.

Nervous hypertension is a classification of symptoms similar to arterial hypertension and, in his opinion, deserves the same popularity. "The two diagnostic terms are alike in not denying possible underlying pathology. Arterial hypertension may follow certain heart and kidney disease. Nervous hypertension may follow various pathological conditions mentioned above. Likewise both arterial and nervous hypertension may arise from functional conditions in the absence of a demonstrable organic disease. Both terms represent a systemic condition but not a complete diagnosis and both types of hypertension frequently exist together."

I would say that in China neuromuscular hypertension is rare and that it is present in a fairly large proportion of patients one sees in practice in this country.

In reviewing the situation, comparing the groups of cases seen in China and here, I am still at a loss to account for the high percentage of hypertension here and the infrequency there. There is certainly a tension to everyday life in

America, in this mechanical and electrical age, that is absent in China; a tension that can be seen and felt in most patients one examines. But is this nervous factor sufficient to account for the great frequency of high blood pressure?

Can hypertension be similar to deficiency diseases such as edemic goiter, pellagra, beriberi or rickets, due to absence of certain elements in our diet? In this connection I have been interested in the recent reports by Barksdale¹³ and others^{14, 15} relative to the action of cucurbitacin upon hypertension. Cucurbitacin is a glucoside extracted from watermelon seeds, which has been shown experimentally and clinically to have a definite vasodilator action, resulting in lowering of the blood pressure. The results appear, from available reports, to be quite similar to those obtained from potassium sulphocyanate bismuth and with liver extract.

Watermelon seeds, dried or toasted, are eaten in prodigious quantities in China. At every social gathering, along with tea or cakes or confection, watermelon seeds are always present and the floors are generally littered with the shells. Melons of many varieties are grown in great quantities all over China during the summer months. The seeds are dried and saved, and a handful can be bought anywhere for a few coppers. Where we would "reach for a Lucky or a sweet", they take a few watermelon seeds. It can be said to be a nation-wide habit, and one in which most foreigners indulge more or less. Is it not possible that the few milligrams of cucurbitacin ingested from time to time throughout life may be sufficient to maintain a relative hypotension and to act as prophylactic agent against hypertension? Improbable as it may sound, when compared to the facts of iodine or vitamin deficiency, is it not possible that there be some such specific hypotensive element in their nation's dietary that is lacking in ours?

To prove such a theory would be difficult, but should not be impossible.

SUMMARY

The most conspicuous difference noted between practice in China and in the United States is the rarity of hypertension in China and its frequency in this country. Sixteen per cent. of office patients in Waterbury, over a period of three years, have had systolic blood pressures of 150 and over.

The blood pressure of the Chinese is lower than the general average for western countries, and foreigners living in China tend to develop lower blood pressures.

In this great difference between the Chinese and Occidentals some factors in the etiology of hypertension should be demonstrable.

The factors generally mentioned,—stature, muscular development, endocrine gland influences, diet and climate—do not seem sufficient to explain the difference. A nervous element may be responsible.

The prevalence of the "spasmogenic aptitude" and of a "neuromuscular hypertension" in the United States and its absence in China may partially explain the infrequency of hypertension there and its frequency here.

The widespread use of watermelon seeds, which apparently contain a substance that lowers blood pressure, may be another factor in the lower tension of the Chinese.

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