The Study of Hypertension in China

LISHENG LIU

From the Fu Wai Hospital, Beijing, China

It is an honor for me to be invited to contribute to this “personal review” of Blood Pressure. A prestigious journal focused on hypertension (HT) management and research, Blood Pressure is nowadays more relevant than ever, as an abundance of evidence has been accumulated which proves that blood pressure (BP) is linearly related to cardiovascular diseases (CVD) complications without a cut-off point between normal and abnormal.

The study of HT in China started in early 1950s, a few years after the founding of the People’s Republic in 1949. However, during the next 30 years or so, from the 1950s to the 1970s, when China was isolated from international exchange or collaboration in medical sciences, Chinese studies were unknown to the outside world, and most papers were published only in Chinese and were even unsigned. As one of those who took part in the study of HT from the very beginning and witnessed its development and progress in those difficult years, I take it as an obligation to write a review on the range of scientific activities, both successful and unsuccessful, which were devoted to the study of HT in China in the 1950s to 1970s.

Back in early 1950s, even when some infectious diseases were still prevalent, a group of cardiologists and epidemiologists had foreseen the threat of the growing HT on public health. In the Chinese Journal of Medicine, there started a heated discussion about HT criteria, differential diagnosis and clinical management, but the discussion centered mostly on severe and malignant cases, on “rice diet therapy”, etc. Since at that time only reserpine and diuretics were available, sedatives were used quite often followed by hydralasine, ganglion blockers or sympathectomy.

All the patients in our HT ward of Fu Wai Hospital at that time were severe or malignant cases. In the period 1950–60, Huang & Liu [1] observed a group of malignant HT cases, mostly young females who were diagnosed as pulseless disease, or claudication, or atypical congenital coarctation of the aorta, but were actually suffering from partial or complete obstruction of the aorta and its main branches including renal arteries. The divergent clinical pictures were merely manifestations of a common pathological process, namely constrictive arteritis. This kind of arteritis is quite common in oriental populations, especially in young women.

In the 1958–59, 13 provinces conducted BP surveys on a total of 740000 people. The average prevalence rate of HT was found to be 5.11%. One year later, in 1959, the 1st National Symposium on CVD was held in Xian. At this symposium, the HT diagnostic criterion for Chinese, based on a Chinese Academy of Medical Sciences (CAMS) BP survey, was proposed by Huang & Gao. The intersecting points – 140 systolic and 90 diastolic of two distribution curves, one for the population with target organ damage signs, the other for those without any target organ damage – were set as cut-off points. Though conservative, this criterion was still found to be more or less fit for Chinese people.

An HT prevention and management collaborative group involving specialists of psychology, physiology, pharmacology, epidemiology, statistics and cardiology was subsequently organized by CAMS. This collaboration between basic sciences and clinical sciences was later found to be highly productive.

At that time, psychological and central nervous system effects were given much attention. Chinese scientists believed that cerebral cortical activation had some impact on the pathogenesis of HT.

In the 1950s, our pharmacologists used to employ renovascular HT (RVH) dog models for experiments, but in the 1960s, HT in dogs was developed by intensified tension of higher nervous activities by Jin & Zeng [2–4]. The co-authors named this model “neuropsychogenic HT”, which was found to be closer to essential HT in human beings. Plasma Ca determined by bioassay showed that the plasma Ca increased with daily stimulation. It was speculated that a disorder of the vasomotor center was involved in this experimental model development. The effects of reserpine [5] on BP, heart rate, higher nervous activity and plasma Ca level during the development of neuropsychogenic HT induced by overstrain of central nervous system were also tested in this model. The result showed that reserpine had inhibitory influence on the development of HT in this model but could not prevent the development of HT completely.
Another series of functional changes and abnormalities with evident hereditary characteristics were found in the processes of cellular Ca^{2+} transportation, utilization, metabolism and their modulation of the vascular smooth muscle in spontaneously hypertensive rats (SHRs) and stroke-prone SHR (SHRSPs), which seemed to be the principal cause of the increased peripheral vascular resistance in HT [6].

Based upon the above-mentioned results, clinical investigation adopted the experience of psychologists in the treatment of neurosis [7–9]. Psychologists deemed HT as a kind of psychosomatic disease and emphasized the importance of psychological factors in HT. Therefore, beginning from the early 1960s, groups of HT patients were successively admitted into Fu Wai Hospital for 1 month to undertake psychology investigation and physical examination, and in the mean time to attend a patient education course.

Patient education was the main theme of this kind of group treatment. Patients learned not only the ABCs of HT but also how to cope with stress, to do some light physical exercises including Qigong and to change their life style. According to the psychological survey among these patients, 68% of them said that they felt pressure in their daily work or study, and 63% of them admitted that they were under stress mentally or emotionally.

On top of the psychological and other non-pharmacological treatment, medication was more effective [10]. Success of this kind of HT management required both the dedicated assistance of the medical profession and the willingness of patients to co-operate, or “subjective initiative” on both parties.

However, this group treatment inside the hospital came under severe criticism. The general public as well as medical professionals blamed it for disrupting order in the hospital, declaring that it was subjectivism. Yet, in spite of all criticisms, this sort of treatment did shed light on the impact of psychoneurological factors on HT pathogenesis, and it was worthwhile applying this treatment, especially in the community or outpatient clinic. The concept that a patient should be treated not only as a patient but also as a social man called for a change in the physicians’ attitude towards patients. They should be caring, sympathetic and compassionate, and should exert their best efforts to build up a new relationship between their patients and themselves. The group treatment did not continue much longer, but the experience gained in building up a new doctor–patient relationship proved successful at the time and still remains a precious asset even today.

In 1969, during the Cultural Revolution, when a group of doctors and scientists were sent to Capital Iron & Steel Company (CISC), we seized the opportunity to start an HT community control program in the steel works. A BP survey was conducted on 10 450 [11] individual workers and followed up for 5 and 10 years subsequently to evaluate the effect of HT management in this community. Back in our HT ward, several hundred HT patients were diagnosed with aortitis, comprising 16% of the total hospitalized HT patients in Fu Wai Hospital. However, in this community, only 1.1% of the HT patients was diagnosed with secondary HT [12]. Therefore, we had to shift our attention to the other 99%. The majority (86%) of them were borderline or mild cases, but even a rise in BP to borderline or mild levels on casual examination meant a definitely higher incidence of cardiovascular complications in the ensuing 10 years. So, the large number of mild HT cases caused a greater public health hazard than the severe ones.

For the majority of mild HT cases, the problem was compliance rather than the efficacy of drugs. Conventional treatment including medication of such very simple drugs as the fixed low-dose compounds worked well for those mild cases. Therefore, the CISC experience demonstrated that in the long run, education of medical personnel and patients could appreciably improve compliance and help to yield good results.

The fact that scientists and clinicians worked together in this community once again made new emerging discoveries possible. It was in this steel works that H.P. Lei, our pharmacologist, was struck by the common and miserable symptom – neck pain or neck stiffness – in HT workers, which reminded him of a traditional Chinese prescription particularly suitable for curing this symptom. The prescription contains purairie as its main ingredient. He finally found this herbal medicine not only very effective in releasing neck pain but also helpful in curing sudden deafness. Later, further studies proved that purairie could improve microcirculation, prolong the life span of SHRSPs and protect the SHRSP brain from HT vascular damage [13]. This drug later came to be very popular and well accepted in HT management.

Another topic worth mentioning is the studies on salt and BP [14, 15]. The national BP survey in 1979 clearly showed the north–south prevalence difference. Tibet was the topmost prevalent area and Beijing second, while Hainan, Canton and some remote areas where minority ethnic groups live had very low prevalence rates. Salt was thought to be one of the contributing factors. A study on the Yi population was then started by G.C. He [16] and his group. The result showed that the Yi people living in high mountains had nearly no HT because they took very little salt, whereas lowland Yi people’s HT increased as they became urbanized and began to take more salt.

Starting from the 1980s, with the progressive overall...
socioeconomic development in China, HT assumed increasing importance as a cause of morbidity and mortality. The HT prevalence rate rose from 7.73% in 1979 to 11.26% in 1991. We now have over 100 million HT patients but only 8% of them are under control.

Now with ever-increasing international exchange and collaboration, we have come out of the shadow of isolation to join the efforts with the world’s medical profession in search of better ways and means to combat public health hazards. With such a large population as ours and with such a huge number of HT patients not yet under control, we have much to do and a long way to go. By accumulating experience both foreign and domestic, we can certainly make the journey easier and faster. Looking back on our past studies on HT, I feel more strongly and urgently than ever that now is the time for us to sum up all experience, including experience gained in the 1950s and 1960s, and reanimate the community-level HT management and patient education in order to ensure the sustainable development of CVD healthcare in China.

REFERENCES

Address for correspondence:
Lisheng Liu
Fu Wai Hospital
Beijing 100037
China
E-mail: chlhypt@163bj.com