

Sadayoshi Ito

Executive Vice President (Director of Research) of Tohoku University in Sendai, Japan

Division of Nephrology, Endocrinology and Vascular Medicine Department of Medicine, Tohoku University School of Medicine, Japan. Email: db554@med.tohoku.ac.jp

Perspectives of hypertension management in Japan



Hypertension is the most common modifiable cause of cardiovascular disease. In Japan, the prevalence of hypertension is high, probably due to an ageing society, high salt intake and an increased number of subjects with metabolic syndrome. Awareness is not an issue because of mandatory annual health check-ups (Japanese law) and the common practice of home blood pressure measurement. On the other hand, the rates of treatment and control are way below expected levels. In order to combat hypertension, it is essential for us to have integrative approaches involving not only patients and healthcare providers but also government and industries. I anticipate that "Hoken-shi", local healthcare nurses, will be a bridge between doctor and patients/residents and contribute to improvement of hypertension management.

Hypertension is a major modifiable risk factor for cardiovascular disease and dementia. Despite significant scientific advancements in the diagnosis and treatment of hypertension in recent years, neither the prevalence of hypertension nor the rate of uncontrolled hypertension has declined. The Prospective Urban Rural Epidemiology (PURE) study reported that prevalence and awareness of hypertension were about 40% and 45% respectively, and that of those who were aware of the diagnosis, the majority (87.5%) were receiving pharmacological treatments but only a minority of those receiving treatment were controlled (about 30%) (1). The results indicate that only 12-13% of hypertensive patients are adequately controlled to their target blood pressure levels. Multiple factors contribute to the poor control of hypertension, including ageing society, social economic situations etc. These factors may vary from country to country. In this article, I would like to describe the unique

features/problems of hypertension management in Japan.

In Japan, lifestyle-related diseases such as hypertension, obesity, diabetes and cancer have recently become huge burdens on the nation's welfare and economy. Recognizing this problem, the Japanese government established Health Promotion Law in 2001 and adopted "Kenkou Nippon 21 (Healthy Japan 21)", a national health care act. Along with already existing laws, this law has made a comprehensive annual health check-up mandatory for almost every resident (including school children) in Japan. In addition, devices for home blood pressure monitoring are widely used (almost all households possess one). Therefore, most Japanese people know their blood pressure levels, so awareness is not an issue. However, the prevalence of hypertension is high (60% for men and 45% for women), and the rates of treatment (about 53% for both men and women) and control (32% for men and 42% for women) are not satisfactory (2). Various factors contribute to these problems, such as an ageing population, high salt intake, increased number of subjects with metabolic syndrome and insufficient understanding/perception in the general population about hypertension as a risk of cardiovascular diseases.

Perception of the general public and the role of "Hoken-shi"

Despite efforts by academic organizations (such as the Japanese Society of Hypertension) and local and central governments, the perception of

the general population regarding the importance of hypertension treatment is rather disappointing. In Japan, there are unique healthcare professionals called "Hoken-shi". They are nurses employed by local governments, who monitor the health status of individual residents of local communities and consult and give advice about better healthcare at the individual level. According to a survey by a group of Hoken-shi and nutritionists (led by Ms. Kumagai), many hypertensive subjects did not take medication or stopped medication because of poor understanding or misperception about the importance of hypertensive treatment. For example, they did not take their medications because they had no symptoms, or because they were told that once medication was started, it was for life and could not be stopped. Thus, in order to improve treatment and control rates, it is imperative to have hypertensive subjects understand the real value and goal of hypertension treatment, that is, to promote healthy life by protecting the important organs (brain, heart and kidney), and not merely to reduce blood pressure itself.

Strain vessel for an explanation of the importance of hypertension management

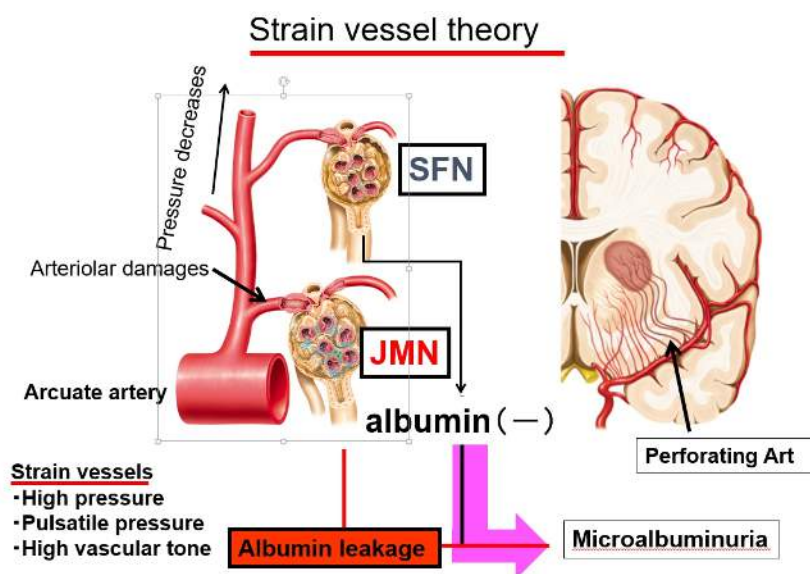


Figure 1: Strain vessels in the kidney and brain (ref. 4)

Based on the unique vascular structures observed in important organs (brain, heart and kidney), we have proposed the strain vessel theory for a mechanism of hypertension-induced organ damage (Figure 1) (3,4). In general circulation, larger arteries gradually divide into smaller arteries, so that pressure inside the arteries also gradually declines as they get smaller. However, in crucial sites for survival, such as the brain stem, blood is supplied by small arteries (perforating arteries in the brain) which branch off directly from large high-pressure arteries. These small vessels (strain vessels) are exposed to high and pulsatile pressure and they have to maintain high vascular tone in order to create large pressure gradients between large arteries and capillary beds. Thus, hypertension would cause great impacts on strain vessels. We and Ms. Kumagai's group use this theory to explain to hypertensive subjects and local residents how important blood pressure control

is, in order to protect these life-saving and tiny vessels, as small as one-tenth of a hair.

Strain vessel theory would also explain close linkages between albuminuria and cardiovascular diseases. While glomerular afferent arterioles in the deep nephrons are strain vessels, those in the superficial nephrons are not, because intra-arterial pressure drops gradually along the long interlobular arteries. Thus, hypertension /arteriosclerosis would first injure deep nephron glomeruli and substantial amounts of protein leak out of these glomeruli, while more superficial glomeruli are spared. This would result in microalbuminuria in final urine; however, it indicates injury to life-saving strain vessels. This theory may also be easier in helping the general population to understand how important albuminuria is as an index of organ damage.

In order to improve the rates of treatment and control of hypertension, it is imperative to convey messages that are concise, persuasive and easy to understand, particularly regarding the mechanisms of hypertension and hypertension-induced organ damage. People act only when they understand and accept the importance and value of actions.

Japanese Society of Hypertension, Healthcare professionals, government and food industries

We cannot emphasize enough the importance of the doctor-patient relationship for the successful management of hypertension. Interviewing patients and doctors in Asian countries, Rahman et al concluded that doctors may provide better care by aligning with their patients on a common understanding of successful hypertension management, and that the willingness of the doctor to adjust their patient interaction style to form a 'doctor-patient team' is important (5). In addition to medications, modification of

lifestyle is essential to achieve successful hypertension management, for which healthcare nurses such as Hoken-shi would play an important role, because they listen to the real voice of patients.

Salt intake in Japan is 11g/day on average, which is high compared with most western countries. Major sources of salt intake are processed foods, not soy sauce or miso soup. In order to promote salt reduction, the Japanese Society of Hypertension (JSH) has recently established a national salt-reduction day – the 17th of each month - and also made a mascot figure “Yoshio-kun” (Good salt) for campaign use (fig 2). The JSH has also acted on the Japanese government to indicate salt content rather sodium content on food labels. We are also calling upon food industries to produce delicious low-salt foods. However, the sale of low-salt foods is going up rather slowly, so more public awareness of the low-salt foods is needed. In this regard, organizations that have direct contact with local residents, such as Hoken-shi, could play a significant role in the dissemination of correct and useful information.



Figure 2: Yoshio-kun
All copy right: Japanese Society of Hypertension

Figure 2: Yoshio-kun, a mascot figure for promotion of salt reduction

Secondary hypertension may be one factor in the poor control of hypertension. Although hypertension guidelines recommend screening for secondary hypertension in the initial phase of hypertension management, secondary hypertension seems to be underdiagnosed. This is particularly true in the case of primary aldosteronism (the most common form of secondary hypertension comprising up to 10% of all hypertensive patients), because the majority of patients have no characteristic clinical features (such as hypokalemia). Physicians may overlook this disease. Even if they suspect it they may hesitate to fully screen and diagnose this disease, because of the many steps and long time before final diagnosis, primarily due to the time required for hormone assay (several days). We have recently developed methods to measure plasma aldosterone concentration and active renin concentration in about 10 minutes (6). These methods enable us to complete screening and confirmatory tests virtually in a couple of days. Spreading such methods in general practice may also help to improve hypertension management.

Conclusions

In order to combat hypertension, it is essential for us to have integrative approaches involving patients and their families, schools, community, media, academic organizations, government, insurers, food and beverage industries, health care providers, and the general public. I anticipate that “Hoken-shi” will be an important bridge between doctors and patients/residents and contribute to improvement of hypertension management.

Particularly, overcoming high salt intake is an important and difficult task in Japan. In Japan, major sources of salt intake are processed foods, not soy sauce or miso soup. In order to achieve salt reduction, the strong commitment of the government and food industries is essential, as in the case of the United Kingdom.

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