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New Era of Management for Diabetes and Hypertension

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Abbreviations

T2DM: Type 2 Diabetes Mellitus; Met-S: Metabolic Syndrome; ACP: American College of Physicians

Editorial

Looking back on the history of medical care, noteworthy diseases have changed along with long history. For recent years, metabolic syndrome (Met-S) has been increasing all over the world, which is an important health, medical and social problems [1,2]. Its prevalence has been higher in developed countries so far [3]. Nowadays, however, there has also been an increase in developing countries and appropriate action has been strongly needed.

Basically, the pathophysiology of Met-S has been insulin resistance and impaired regulation of lipid metabolism is also associated [4-6]. Among them, the genetic predisposition is a factor of Met-S, and the prevalence of Met-S differs depending on the ethnic group [7]. For example, the HDL gene has strong relevance and may be inherited by 70% [8]. Furthermore, several factors have affected by lifestyle habitual factors, age, socioeconomic status, and so on [9].

Regarding the frequency of Met-S, results somewhat differ depending on diagnostic criteria. However, the prevalence of Met-S has been increasing more and more in both developed and developing countries [9]. As a standard or average estimation, the prevalence in adults seems to be about 20-25% worldwide [10]. As Met-S has increased rapidly, the prevalence of type 2 diabetes, hypertension, cardiovascular disease, obesity have also increased in parallel [11].

Metabolic syndrome includes obesity as a fundamental pathophysiological status, and also hypertension, diabetes, dyslipidemia, and so on. Among them, in this article I would like to introduce several recent findings on hypertension and diabetes.

As to hypertension, its frequency is high around the world. Various guidelines have been announced in each area or country. Regarding hypertension and heart disease, guidelines have been announced in Europe [12,13], North America and in Japan [14-16]. Furthermore, there are guidelines on young generation and the elderly, lipid and obesity, which also covers widely relating to hypertension and heart disease [17-20].Therefore, treatment of hypertension will be necessary to comprehensively utilize each guideline for management.

When hypertensive patients are treated, antihypertensive drugs are not given from the beginning. It is important to start correcting or adjusting lifestyle at first. For hypertension and high blood pressure, treatment and care other than drug administration have been conventionally called "non-drug therapy". In addition to patients who have been already diagnosed and suffering from hypertension, there are many subjects in preclinical stage of hypertensive tendency. Such people must be considered for healthier life from the viewpoint of first prevention of hypertension at the preclinical stage [21].

There was a guideline for hypertension presented in 2017. It was High Blood Pressure Clinical Practice Guideline as A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. As for nonpharmacological Interventions, it recommended 6 possible preventive or treatable factors. They are weight loss [22], a heart-healthy diet such as the DASH (Dietary Approaches to Stop Hypertension) diet [23], sodium reduction [24], potassium supplementation [21], increased physical activity and reduction in alcohol consumption [25].

There is a report on the withdrawal of antihypertensive medicine at a Japanese clinic which is specific to hypertension [26]. There are thousands of cases of hypertension annually, among which the percentage of antihypertensive drugs that could be withdrawn was 4.6%-6.1% over the last few years. Among them, 50 cases in which antihypertensive drugs were discontinued (25 cases in both males and females) were examined. As a result, the family history of hypertension was 33 cases (66%) in women, smoking in men was 76%, alcohol consumption in men was 60%, besides 42% for dyslipidemia and 12% for type 2 diabetes. Usually, it can be judged that 12% seems to be low as compared with the prevalence of diabetes in patients with hypertension.

One reason for this would be that there are microangiopathy and macroangiopathy due to the complication of diabetes. Consequently, it may be related to the existence of impaired function of blood vessel. In other words, it is presumed that improvement of blood pressure control is not easy due to vascular disorders developed by the influence of diabetes.

Furthermore, examining the six cases (12%) out of 50 cases, it was characterized that the body weight was reduced by 2.8 kg on average by improving the meal and lifestyle habits. Therefore, it seems that there is a relation with the significant improvement of the condition of diabetes.

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Up to this point, recent trend and research results of hypertension was described. Subsequently, development of guideline for diabetes will be shown. The main purpose and target of diabetes therapy is the prevention of complications [27]. For years, the endpoint of many clinical trials is to lower blood glucose levels, but intensive treatments aimed at lowering the HbA1c to less than 6.5% are often accompanied by hypoglycemia as a side effect. At the same time, intensive regimens have not shown a reduction of cardiovascular complications in the long-term [28-32]. For example, the action to control cardiovascular risk in diabetes (ACCORD) trial was prematurely discontinued, following the observation of an increase in overall mortality, cardiovascular-related deaths, and severe hypoglycemic events [28].

Regarding the process of diabetes guidelines, comments have been made from different positions in each country and each organization. In the United States, there were some guidelines and statements on diabetes guidelines, including the American Diabetes Association (ADA), the American Society of Clinical Endocrinology, and the American Endocrine Society (AACE/ACE). However, there was a difference in the contents, and confusion was actually seen in the clinical setting.

Therefore, the Clinical Guidelines Committee of the American College of Physicians (ACP) independently evaluated several guidelines, and released a statement on ACP's own HbA1c management goal. ACP is an authoritative conference and highly reliable for years. Unlike ADA and AACE / ACE guidelines, the statement of ACP is extremely shocking, with a management goal of type 2 diabetes patients under medication of 7% to 8% HbA1c [33].

Prior to presentation, ACP examined the guidelines for the existing HbA1c management objectives of six academic organizations. They included AACE / ACE, ADA, the Institute for Clinical Systems Improvement (ICSC), the UK National Clinical Evaluation laboratory (NICE), Scottish University guideline network (SIGN), US Department of Veterans Affairs and US Department of Defense guidelines (VA / DoD) [34-39].

Furthermore, these studies were based on 5 well-known previous mega studies, including 1) UKPDS 33, 34, 2) UKPDS 80, 3) ACCORD 4) ADVANCE, 5) VADT associated with lots of reliable data accumulation.

As described above, there have been some transition in guidelines for hypertension and diabetes. Further development will be expected by accumulation of medical treatment and clinical research in the future.

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