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Editorial

Can Artificial Intelligence Change the Practice of Managing Hypertension?

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As the prevalence of hypertension in Korea continues to increase, the number of hypertensive patients is estimated at 12 million (approximately 28% of the Korean adult population).[1] However, the treatment and control rates of hypertensive patients are only about 65% and 48%, respectively, and have been unchanged for several years.[1] Such negative statistics regarding blood pressure (BP) management are observed not only in Korea, but also around the world.

Hypertension is a major risk factor for cardiovascular diseases including coronary artery disease, cerebral infarction, and heart failure. In the Systolic Blood Pressure Intervention Trial, the group with a target systolic blood pressure (SBP) of 120 mmHg had a lower risk of heart failure and myocardial infarction as well as overall mortality than the group with a target SBP of 140 mmHg.[2] In addition, in the Strategy of Blood Pressure Intervention in the Elderly Hypertensive Patients trial, which compared standard and intensive treatment groups in patients aged 60 to 80, intensive treatment reduced the risk of cardiovascular disease.[3] The results of these landmark studies support the benefits of strict BP control in patients with hypertension.

However, in real clinical practice, treatment of hypertension is often unsuccessful for various reasons. Low patient awareness about hypertension and poor adherence to antihypertensive medications hinder control of hypertension. In addition, antihypertensive medications might not be properly escalated or added due to physician inertia, impairing the ability to achieve the target BP. Self-BP measurement is a method aimed to overcome these problems and help control BP. In a study conducted on 7,751 hypertensive patients attending outpatient clinics in Korea, self-BP measurement decreased mean BP, significantly increased BP control rate, improved awareness of BP, and increased medication adherence.[4] Self-BP measurement may also affect clinical practice. One meta-analysis showed that therapeutic inertia was lower in the home BP measurement group than in the usual care group.[5]

BP control through self-BP measurement is more effective when accompanied by active intervention through telemonitoring.[6] The active intervention may be performed by healthcare personnel or by self-adjustment based on pre-specified algorithms. Although the clinical situation varies by country, interventions with direct participation of healthcare personnel such as pharmacists, attending nurses, or physicians are the safest and most effective but increase medical costs.[7] Therefore, efforts continue to take advantage of

Data Sharing Statement

The data generated in this study are available from the corresponding author upon reasonable request.

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recent technological advances to achieve efficacy, safety, and cost-effectiveness of self-BP measurement and telemonitoring.

Artificial intelligence (AI) is widely applied in the field of hypertension. Much research is being conducted to improve the accuracy of BP measurement, diagnose hypertension, predict cardiovascular risk in hypertensive patients, and manage hypertension.[8] Regarding cost-effectiveness, AI-based active intervention for home BP could be an alternative to interventions performed by healthcare personnel. In this respect, this study conducted by Choi et al.[9] will examine whether AI can be used for hypertension management simply by providing feedback on measured BP and improving medication adherence. However, the issue of legal and ethical responsibility for events that occur during such AI-based interventions is an unresolved challenge.[10] The AI and clinical decision support system used in Choi et al.[9] should be verified through follow-up studies for its ability to address various clinical situations that may occur regarding patients and safety.

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