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Metabolic Abnormalities and Renal Function in Diabetic Patients

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Commentary

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DESCRIPTION

Changes in eating habits and lifestyle have contributed to the continued rise in the number of obese patients, and the number of diabetic patients has risen in tandem. The total number of registered diabetes patients in 2020 indicates a very high prevalence of diabetes (10.7%); however, the glycemic control rate, defined as a HbA1c level of 6.5, was only 24.1%. South Korea has the third highest diabetes-related mortality rate in the Organization for Economic Cooperation and Development, trailing only Mexico and Turkey. As a result, national diabetes management is critical. Furthermore, 28.6% of type 2 diabetes patients have macrovascular complications like cardiovascular disease and peripheral arterial disease, while 67.2% have microvascular complications like retinopathy, nephropathy, and neuropathy [1-3]. Diabetic kidney disease (DKD) is the most common cause of end-stage renal failure and is a serious diabetes-related complication. Because many people die as a result of the early onset of cardiovascular disease associated with impaired renal function, early detection and management of DKD is critical. However, unlike type 1 diabetes patients, those with type 2 diabetes and impaired renal function may not have albuminuria, and their estimated glomerular filtration rate (eGFR) may be reduced for a variety of reasons, making early DKD management difficult. Several risk factors, including metabolic syndrome, hypertension, hyperglycemia, insulin resistance, proteinuria, advanced glycation end products (AGEs), and oxidative stress, can lead to DKD. As a result, various methods for monitoring renal function in diabetic patients are required. Patients with metabolic syndrome, in particular, have an increased risk of type 2 diabetes and a high risk of diabetes-related complications; thus, the relationship between metabolic syndrome and type 2 diabetes must be investigated.

Approximately 72% of adult patients with diabetes aged 30 years or more had hypercholesterolemia [4], which is closely associated with AGE levels and is associated with higher blood AGE levels in patients with hyperlipidemia, retinopathy, or peripheral neuropathy compared to those without this disease. Furthermore, this is linked to metabolic syndrome. A study that compared skin auto fluorescence (SAF) in two patient groups based on the presence or absence of metabolic syndrome and measured the AGE level in the skin found that the SAF value in the metabolic syndrome group was significantly higher (mean SAF: 2.1 AU) compared to the control group (mean SAF: 1.9 AU). Furthermore, there was a link between SAF and high-density lipoprotein cholesterol (HDL-C). To prevent DKD, it is critical to manage metabolic syndrome, which is a cluster of diseases that occur together, including hypertension, hyperglycemia, dyslipidemia, and obesity, and is one of the world's major public health problems. Even after controlling for smoking, sex, body mass index, and plasma creatinine, diabetes was strongly associated with metabolic syndrome [5]. Based on a prospective cohort study, reported that elevated blood insulin concentrations preceded metabolic disorders in insulin resistance syndrome patients, implying that insulin resistance is the cause of various risk factors for metabolic syndrome; this indicated a close relationship between metabolic syndrome and diabetes.

As a result, understanding and managing the various causes of metabolic syndrome is critical for preventing DKD. The threshold phenomenon, in which the prevalence of metabolic syndrome, including diabetes, rapidly increases, is particularly noticeable in middle-aged people (age 40). According to data from the Korean Diabetes Association and the Health Insurance Review and Assessment Service, the diabetes awareness rate among patients with diabetes aged 50 or less is approximately 60%, and 60.6% of people in their 40s and 60s had no experience receiving diabetes education. As a result, it is expected that these people will have difficulty controlling their diabetes. Furthermore, poor diabetes management can lead to diabetes-related complications such as DKD.

CONFLICT OF INTEREST

None

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