

Abstract Submission No. : IL-9109

Korean prospective cohorts for glomerular disease : current status and future direction

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Glomerular disease is the third most common cause of ESKD in the USA, Europe, and Korea following after diabetes mellitus (DM) and hypertension. In China, the primary glomerular disease is the most common cause of ESRD, although it showed a downward trend as diabetic nephropathy (DN) and hypertensive nephropathy increased. Considering that DM or hypertension also causes secondary glomerular disease, understanding the overall epidemiologic changes of glomerular diseases is an important issue.

The development of the glomerular disease is affected by both genetic and environmental factors. Recent genome-wide association studies have shown that genetic susceptibility can identify individuals at risk of glomerular diseases in immunoglobulin A nephropathy (IgAN), membranous nephropathy (MN), and DN among type 1 DM. Apolipoprotein L1 (APOL1) genetic variants explain excessive life-time risk of kidney diseases including focal segmental glomerulosclerosis (FSGS) for persons of African ancestry. In the USA, 72% of black patients with ESRD due to FSGS were associated with APOL1 genetic variants. However, the prevalence of glomerular disease may vary from environmental factors. The prevalence of FSGS increased in the Caucasian population in Minnesota, but the prevalence of FSGS in the Caucasian in Northern Europe was relatively low. In developing countries, a number of infections can cause Th1 predominant immune response and become susceptible to membrano-proliferative glomerulonephritis (MPGN). Socioeconomic and behavioral factors may also result in a variety of glomerular diseases. Obesity reflects the lifestyle and is known to be associated with FSGS, although other kidney diseases can be combined. Biopsy indication reflects social factors and also affects the epidemiology of glomerular disease. Because the fee for free services by the health system increased the biopsy rate, the biopsy rate of USA was higher than that of Europe. Massive urinary screening tests at schools in Korea and Japan may have led to diagnosing more glomerular diseases in relatively earlier stages.

Koreans are mostly composed of East Asian ethnic group and therefore genetic background in Korea is thought to be more similar than other countries. On the other hand, Korea has experienced rapid economic growth during a short time and the aging population is growing. These environmental changes would have had a profound impact on the epidemiologic change of glomerular diseases. To better understand the pathophysiology, biomarkers, and treatment targets of glomerular diseases and ultimately to improve clinical outcomes, it is imperative to translate and integrate research with various types of bio-specimen linked to deep clinical phenotyping the electronic health record and administrative data. Since the late 1990', Korean researchers have tried to construct large scale, multicenter cohorts to understand Korea-specific epidemiology and prognosis of glomerular diseases. In this short talk, we are able to discuss the current status and future direction of cohort for the glomerular disease.