New Aspects of Renal Diseases —From Urine Checkup to Kidney Transplantation—

Moderator: Hideto SAKAI

Division of Nephrology and Metabolism, Tokai University School of Medicine, Isehara

Moderator: Hiroshi NIHEI

Tokyo Women's Medical University Kidney Center, Tokyo

1. Renal Screening Tests

Eiji KUSANO, Naoki MURAYAMA, Yasuhiro ANDO, Teruo MEGURO and Yasushi ASANO

Division of Nephrology, Department of Medicine, Jichi Medical School, Tochigi

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The increase in recent years in the number of dialysis patients in Japan is thought to be mainly a result of westernization of the diet and an increase in the number of patients with diabetic nephropathy and hypertensive nephrosclerosis due to the aging population. Early detection and early treatment of kidney diseases are important for reducing the rate of increase in the number of dialysis patients, but many patients with kidney disease, diabetes mellitus or hypertension do not undergo medical examinations until the end stage of renal failure because of the lack of subjective symptoms. Thus, renal screening tests are important to reduce the incidence of kidney disease, though follow-up is important as well as renal screening tests. In this paper, the present status of renal screening tests in Japan is described, and problems in follow-up of persons who have shown abnormalities in results of basic health examinations, in the situation regarding examinations at medical institutions and in renal screening tests in Utsunomiya City (1) are discussed.

Significance and problems in renal screening tests

Renal screening tests are considered to be important for early detection and early treatment of kidney diseases and thus for reducing the incidence and the rate of progression of chronic renal failure. However, there are many problems at present concerning renal screening in Japan. One problem is that the methods used for urinalysis differ and the levels of accuracy are not the same. This problem must be resolved. Moreover, although urinalysis is carried out regularly for children up to the age of 15 years, this is not the case for people over the age of 15 years, and many people over the age of 15 years who show abnormalities in the results of urinalysis do not undergo subsequent examinations. It has also been pointed out that there is a lack of consistency in guidelines for subsequent management of company workers who show abnormalities in the results of urinalysis performed as part of health examinations for company employees. Moreover, both the percentage of adults in Japan who undergo health examinations and the percentage of adults showing abnormalities in results of urinalysis who undergo further examinations are low. It has also been pointed out that there is no evidence of early detection of renal disease being useful for preventing the progression of disease. Another current problem is that the number of specialists in Japan is not sufficient to cope with referrals of all persons who show abnor-

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Reprint requests should be addressed to Dr. Eiji Kusano, Division of Nephrology, Department of Medicine, Jichi Medical School, 3311-1 Yakushiji, Minamikawachimachi, Kawachi-gun, Tochigi 329-0498

malities in results of urinalysis. The establishment of measures and a system that can resolve these problems is needed.

Establishment of a system for detecting kidney diseases in basic health examinations in Utsunomiya City

Good results have been obtained from the introduction of a kidney disease prevention program and a diabetes prevention program in Utsunomiya City (1, 2). The number of residents of Utsunomiya City undergoing health examinations who show a serum creatinine level of more than 1.4 mg/dl has been decreasing following a peak in 1996. The same trend has been seen for diabetes.

Further investigation is needed to determine whether these trends are a direct result of the establishment of these prevention programs. Future objectives of the kidney disease and diabetes prevention programs are: 1) further increase in the percentage of residents who undergo examinations, 2) appropriate management of persons who show abnormalities in the results of examinations, 3) establishment of a health-care system that includes guidance for lifestyle and diet, and 4) cooperation of local government bodies, public health nurses, dieticians and doctors. In addition to the kidney disease and diabetes prevention programs, efforts are needed to establish programs for prevention of other so-called lifestyle-related illnesses, such as hypertension and hyperlipidemia, that involve cooperation of medical doctors associations, local government bodies, residents and doctors.

The increase in recent years in the number of dialysis patients due to an increase in the number of patients with diabetic nephropathy is becoming a serious problem. The number of people showing a fasting blood glucose level of over 140 mg/dl has been dramatically increasing. A survey conducted in 1999 revealed that 35.9% of residents of Utsunomiya City aged over 40 years who are thought to have diabetes and hyperglycemia may have early diabetic nephropathy when the criterion for diagnosis of microalbuminuria is a urine level of albumin over 17.1 mg/gCr. The percentage of residents is still high (21%) even when the conventional criterion of 30 mg/gCr is used (3). Since the progression of diabetic nephropathy to renal failure is generally fast, treatment in the early stage is important. Effectiveness of control of blood glucose level and blood pressure for suppressing progression of early diabetic nephropathy to overt nephropathy has been reported, and much interest has been shown in the effectiveness of angiotensin-converting

enzyme inhibitors (4) and angiotensin II receptor antagonists (5, 6) and recently in the effectiveness of aldosterone antagonists for suppressing the progression of diabetic nephropathy. Since diabetic nephropathy is currently the major cause of renal failure requiring dialysis, the establishment of a system to ensure that residents undergo regular examinations and receive appropriate treatment is needed to prevent progression of early diabetic nephropathy to overt nephropathy.

Future prospects

Further investigation is needed to obtain evidence that renal screening tests are useful for the prevention of onset and prevention of progression of renal diseases. Prevention of onset and prevention of progression of renal diseases will require not only the development of treatment strategies utilizing the latest techniques in various fields of medical science such as genetic engineering and regenerative medicine but also the establishment of an effective system from screening to treatment stages that involves the cooperation of local government bodies.

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