

Recovery from Glomerular Sclerosis

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【 Outline of survey 】

As the treatment for infectious diseases and malignancies has been dramatically expanded, so-called lifestyle-related diseases are emerging as a major threat to our lives. In particular, the incidence of diabetes is markedly increasing along with the recent changes in our dietary habits. The cause of calamities with diabetes is its complications involving various organs. Of those, a progressive loss of the kidney function leading to lack of urine formation, the state called chronic renal failure, is one of the most serious outcome of diabetes. Hemodialysis is practically the only treatment for chronic renal failure in Japan. However, it offers only limited value in postponing inevitable death. Because chronic renal failure is the final stage of majority of renal diseases, a large number of researchers have been pursuing the cause of chronic renal failure. Yet, no fundamental remedy has been formulated. The reason for this failure resides in the fact that once a part of the kidney is damaged by the original disease and lost, it would never be repaired. Our study aims at the repairment of the disease. Animal studies are essential in searching for effective drugs and other means of disease treatment. Recently, manipulation of genes in mice became possible and has contributed tremendously to the search for causes and treatments of diseases. However, due to the inherent resistance of mice to the development of chronic renal failure, mice have been little useful in the studies of chronic renal failure. Our laboratory has overcome this hurdle by making the best use of available techniques and, for the first time, succeeded in reproducing the disease characteristics of human chronic renal failure in mice. Our success has been the focus of the global attention.

【 Expected results 】

Thus far, researchers have concentrated their effort on identifying the cause of chronic renal failure. These studies have discovered a number of molecules and mechanisms that are involved in chronic renal failure. Use of drugs to inhibit these molecules and mechanisms has been attempted. Among those, the only medication that has been proven effective in humans and is currently used in practice globally is the inhibitors of the generation or action of angiotensin. This Project Leader was deeply involved in the development of the angiotensin inhibitors and, through which, it became apparent that the effect of this class of drugs is a far cry from “ the cure ” of chronic renal failure; their effect is limited to temporary suppression of the progression of renal failure. This Project aims at “ the cure ”; in other words, to revert “ the disease state ” to “ the normal state.” By finding the clue to “ the cure ”, we believe, this Project will lay the path of new research activities toward elimination of chronic renal failure.

【 References by the principal researcher 】

None

【 Term of project 】 FY 2004 - 2008

【 Budget allocation 】 82,600,000 yen

【 Homepage address 】 None