Multidisciplinary Cooperation-Based Coaching Program “TOGANE” Prevents the Progression of Diabetic Nephropathy in Japanese

Chiba Prefectural Togane Hospital[1)], Social Insurance Nursing Training Center Funabashi[2)]

Yuka Suzuki[1)], Harumi Nishihara[1)], Hiromi Maeda[1)], Urara Sugihara[1)], Sadako Wakamatu[1)], Noriko Hasegawa[1)], Keiko Yoshino[1)], Mitsu Ando[1)], Michiko Aoki[2)], Shigeki Imamura[1)], Humiko Uehara[1)], Koko Kayano[1)], Aizan Hirai[1)]

千葉県循環器病センター

Diabetic nephropathy (DN) is the leading cause of end-stage renal disease. We demonstrated that multidisciplinary cooperation-based coaching program “**TOGANE** (**T**eam-**O**riented **G**enerous Assist for the patients with diabetic **NE**phropathy) prevents an increase in urinary albumin in patients with stage 2 diabetic nephropathy in the ADA’s 73nd scientific sessions. The present study was performed to evaluate the effectiveness of program “**TOGANE**” for preventing the progression of DN from a view point of change in stage of DN. Program “**TOGANE**” is consist of the coaching tools and workflow by certified diabetes educator (CDE) and dietitian for the dietary salt restriction (6g/day) and blood pressure control in the treatment of diabetic nephropathy. In the program “**TOGANE**”, 10 to 20 min lifestyle support is delivered by CDE and dietitian to the patients every visit. Each patient was also given a salt restriction recipe every visit. In the present study, 356 diabetic patients were included. Observation period is 2 years. Number of the patients in each stage and changes in the stage of DN are shown in Table. Lifestyle support for salt reduction performed by multidisciplinary cooperation caused a significant reduction in salt intake and prevented the progression of DN. Thus, multidisciplinary cooperation-based coaching program “**TOGANE**” contributes to prevent the progression of DN in Japanese.

【Introduction】

The increase in diabetic patients and its complications requires intensive disease management of diabetes worldwide. In Japan, whereas patients requiring renal dialysis due to diabetic nephropathy(DN) represent only about 4% of total diabetic patients, their medical costs account for more than 40% of the total healthcare costs for diabetic patients, amounting to 13.7BUSD. The shortage of medical resources has become a serious problem in Japan. Disease management of diabetes by multidisciplinary cooperation is reported to improve quality of diabetes care. We have established and operated multidisciplinary cooperation-based coaching program “**TOGANE** (**T**eam-**O**riented **G**enerous **A**ssist for the patients with diabetic **NE**phropathy)” since 2011.

The dietary salt restriction is reported to potentiate the renoprotective effects of angiotensin II receptor blockers (ARBs) in type 2 diabetes[1)-3)]. As the dietary salt intake in Japan (11-13g/day) is reported to be significantly higher than those (7-9g/day) in foreign countries, dietary intervention to decrease salt intake seems to be important for preventing the progression of DN in Japan. We also demonstrated that the glucagon-like peptide-1 receptor agonists attenuates the progression of overt DN in Type 2 diabetic patients[4)]. The present study was performed to evaluate the effectiveness of program “**TOGANE**” for preventing the progression of DN.

【Materials and Methods】

1. Regional EHR and Regional disease management MAP

We have constructed and operated regional EHR since 2011. Diabetic patients more than 5,000 have been registered to our EHR. This EHR system consists of two mapping systems for disease management. First is a personal mapping system named "Case management MAP", which is a tool for case management of individuals to achieve optimized therapy using minimum data set for diabetes mellitus. Second is a regional disease management mapping system named "Regional disease management MAP", which is a tool to triage diabetic patients having a high priority for treatment from whole diabetic patients based on abnormal values of major minimum data set.

2. Multidisciplinary cooperation-based coaching program “TOGANE”

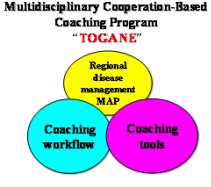
Program “**TOGANE**” is mainly consist of the coaching tools and workflow by certified diabetes educator (CDE) and dietitian for the dietary salt restriction (6g/day) and blood pressure control in the treatment of DN. In the program “**TOGANE**”, lifestyle support is delivered by CDE and dietitian to the patients every visit. Each patient was also given a salt restriction recipe every visit.

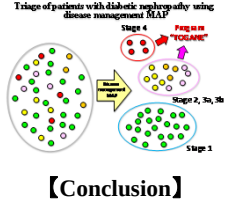
3. Subjects and study design

In the present study, 356 diabetic patients at stage 2, 3a, 3b and 4 of DN were included. Number of the patients of each stage was as follows; stage 2: 169, stage 3a: 77, stage 3b: 79 and stage 4: 31. All patients were administered ARBs and treated on conventional therapy plus the program “**TOGANE**”. Study period is 2 years. Renal function (estimated GFR; eGFR), urinary albumin excretion, proteinuria are determined at every two months.

4. Statistical analysis

Statistical analysis was performed using the JMP® 9 software (SAS Institute Inc., Cary, NC, USA). All values are expressed as the means ± SEM. Values of p<0.05 were considered to indicate statistically significant differences.





Background of the studied patients with Diabetic Nephropathy

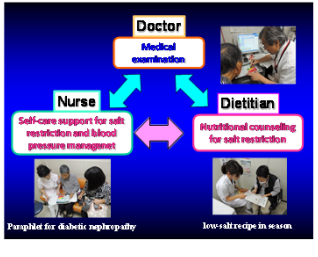
	Stage 2	Stage 3a	Stage 3b	Stage 4
Number of patients	169	77	79	31
Age (year old)	66.6 ± 0.8	66.1 ± 1.3	70.5 ± 1.2	71.9 ± 2.1
Gender (male%)	52.1	53.6	55.1	45.1
HbA1c (NGSP,%)	6.6 ± 0.1	6.8 ± 0.2	6.4 ± 0.1	6.3 ± 0.2
eGFR	74.5 ± 1.6	65.0 ± 2.1	41.0 ± 1.0	22.5 ± 1.0
U-Alb (mg/g Cre)	69.4 ± 7.5			
U-Pro (g/g Cre)	0.15 ± 0.14	1.12 ± 0.21	1.64 ± 0.20	2.43 ± 0.32
ARB (%)	100	100	100	100
Insulin(+)/GLP-1RA(+) (%)	19.9	25.6	14.2	38.7*
Insulin(+)/GLP-1RA(-) (%)	16.2	19.2	24.4	9.71
Insulin(-)/GLP-1RA(+) (%)	13.9	16.7	26.9	15.4
Insulin(-)/GLP-1RA(-) (%)	50.0	38.5	34.6	32.3

Number of the patients in each stage and changes in the stage of DN are shown in Table. All patients were administered angiotensin II receptor blockers (ARBs). Combination therapy with insulin and renoprotective GLP-1 receptor agonists (GLP-RAs) was performed in the patients shown in Table. Mean ± SEM.

*: p < 0.05

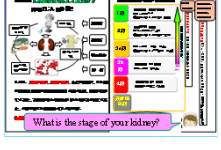
Team-Oriented Generous Assist for the patients with diabetic NEphropathy

The workflow of program “TOGANE”



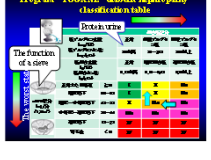
Coaching tools in program “TOGANE”

Pamphlet for diabetic nephropathy



The low-salt recipe in season

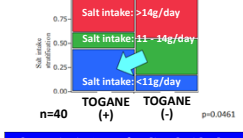
Table for stage Classification



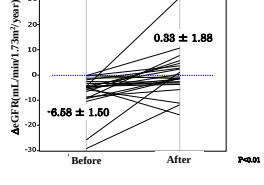
“AIUEO”(Japanease ABC)“Table for Low salt diet

【Results】

Change in Salt intake (g/day)



Change in ΔeGFR after liraglutide therapy

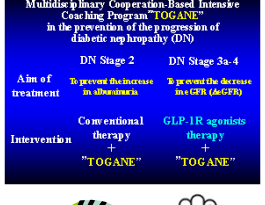


Changes in the stage of diabetic nephropathy in the patients who received program “TOGANE”

	Number of patients	Group-A improved (%)	Group-B mainteined (%)	Group-C exacerbated (%)
Stage 2	169	20.1	59.8	18.9
Stage 3a (eGFR>44, U-P>0.5g/g Cre)	77	20.8	54.5	26.0
Stage 3b (eGFR: 30-44, U-P>0.5g/g Cre)	79	11.4	78.5	8.9 ↓
Stage 4 (eGFR<30)	31	9.7	74.2	16.1

Number of the patients in each stage and changes in the stage of DN are shown in Table. Lifestyle support for salt reduction performed by multidisciplinary cooperation caused a significant reduction in salt intake and prevented the progression of DN. Multidisciplinary cooperation-based coaching program “**TOGANE**” contributes to prevent the progression of DN in Japanese.

【Conclusion】



Low-salt is essential in order to protect the kidney in diabetic patients.

1. EHR is effective in order to determine the priority of the support to diabetic patients who need tertiary prevention.
2. Lifestyle support for salt reduction performed by multidisciplinary cooperation-based coaching program “**TOGANE**” caused a significant reduction in salt intake and prevented the progression of DN.
3. Multidisciplinary cooperation-based coaching program “**TOGANE**” contributes to prevent the progression of DN in Japanese.

【References】

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