

**Stage 4 CKD presentation in patients over 75
Years Old differs from that in patients less
than 75 Years of Age**

**Hiromichi Suzuki, Tsutomu Inoue, Tomohiro Kikuta,
Yusuke Watanabe, Hirokazu Okada**

Department of Nephrology, Saitama Medical University

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Author
Hiromichi Suzuki

- Conflict of Interest
- The authors declare that they have no conflict of interest in this study.

Introduction

The proportion of older people in the general population is steadily increasing and the fastest growing segment of that population during the past decade is older than 75 years. With this increases in prevalence of elderly people, proportion of prevalent chronic kidney disease (CKD) increased in parallel. In spite of these situations, the appropriate treatment of older patients with CKD remains unclear. Moreover, there are a lot of unresolved problems in real world.

Aim

The aim of this study is to evaluate the prognosis of patients >75 years in comparison with those between 74 and 65 years, the longitudinal follow-up of elderly patients with CKD stage 4 was carried out in a single center and to characterize patients with CKD stage 4 older than 75 years.

Patients and Methods I

Patients were recruited from specialist renal clinics at Renal Disease Center, Saitama Medical University from January 2004 to December 2005. All participating patients were followed for 5 years or until death, commencement of dialysis therapy, receiving renal transplantation, finding of neoplasm, or occurrence of a cardiovascular event (fatal or non-fatal myocardial infarction, cerebrovascular disease, aortic dissection).

Patients and Methods II

Inclusion criteria were CKD as defined by K/DOQI, not yet on dialysis, stable renal function within the last 3 months (<5 mL/min/1.73 m² change in GFR), and no change in medication in the preceding 3 months.

Exclusion criteria included known left ventricular dysfunction (ejection fraction $<55\%$), or signs and symptoms of congestive heart failure, significant valvular or coronary heart disease, and use of sedative or hypnotic drugs or any other drugs potentially affecting blood pressure during ambulatory monitoring, e.g., corticosteroids.

Definition

Late referral was defined as the patients who were referred from general physician based clinic during the recruitment of this study.

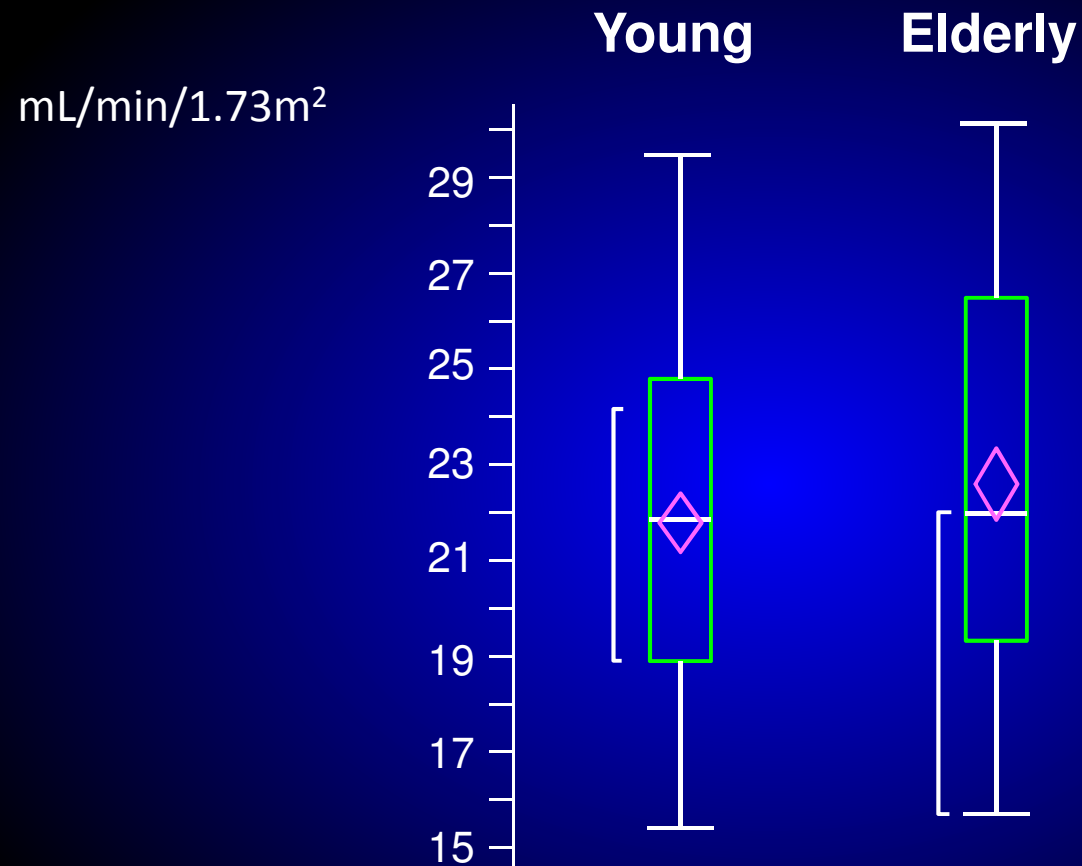
The cause of CKD was assessed by reviewing the clinical history and investigations. Patients were classified as “hypertensive/glomerulosclerosis” if the patients had no clear evidence of active renal disease but had a history of hypertensive diseases and positive urinary protein excretion without casts. DM was defined as HbA1c 5.8% or higher, or taking antidiabetics including insulin. GN was defined by biopsy or clinical diagnosis such as urine casts including unregulated red cells.

Patients Characteristics

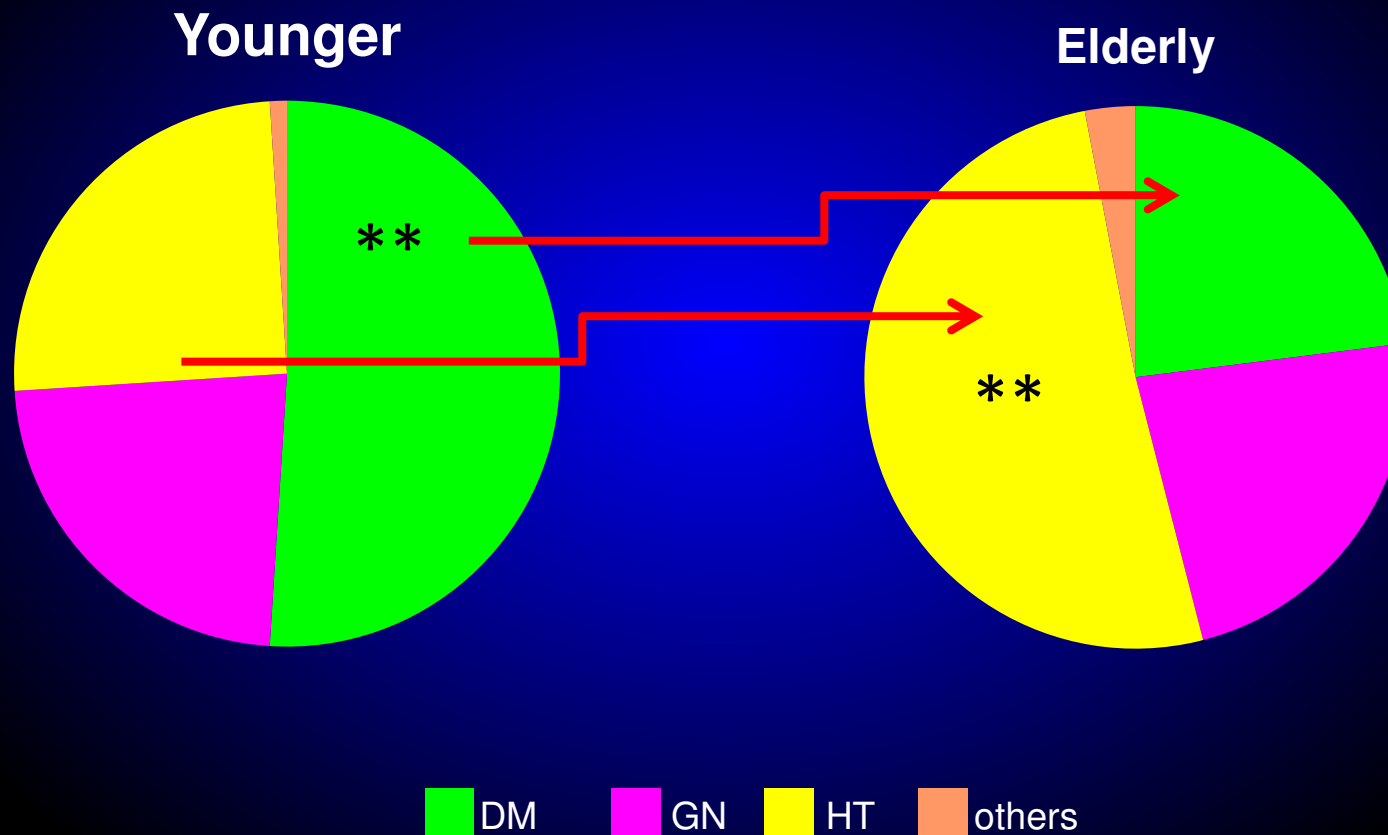
Variables	Younger Group	Elderly Group
	N=179	N=106
Age (years)	70.8±2.0	79.2±2.6*
Male (%)	106/73	58/48
eGFR (ml/min/1.73m ²)	21.6 ± 3.3	22.1 ± 4.1
Underlying disease(male/female)(%)		
DM	91 (60/31)(51)	24**(15/7)(23)
GN	41 (25/16)(23)	24 (17/9)(23)
HT	44 (18/26)(24)	54**(25/29)(51)
others	3 (3/0)(2)	4 (1/3)(3)
Late Referral (male/female) (%)	44 (28/16)(25)	23 (11/12)(22)

eGFR, estimated glomerular filtration; DM, diabetic nephropathy; GN, glomerular nephritis; HT, hypertensive nephrosclerosis. ** indicates P<0.01 compared with younger group.

Comparison of eGFR between patients in younger and elderly group



Comparison of underlying disease of patients between younger and elderly group



Baseline characteristics of the study population

Variables	Younger(N=179)	Elderly (N=106)
SBP (mmHg)	137.5 \pm 13.7	140.9 \pm 18.3
DBP (mmHg)	81.9 \pm 6.1	77.9 \pm 6.5*
HR (beats/min)	72.3 \pm 8.6	68.3 \pm 5.4
Serum albumin (g/dL)	4.0 \pm 0.3	3.8 \pm 0.6
Hemoglobin (g/dL)	11.6 \pm 0.7	11.2 \pm 0.8
Total cholesterol (mg/dL)	189.2 \pm 42.3	177.2 \pm 46.3
Phosphate (mg/dL)	4.1 \pm 1.7	4.3 \pm 1.5
Calcium (mg/dL)	9.1 \pm 1.1	9.4 \pm 1.0
Urinary protein excretion (g/gCr)	1.34 \pm 0.88	1.23 \pm 0.90

SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rate.

* indicates P<0.05 compared with younger group.

Comparison of variables between DM and non DM nephropathy

Variables	DM nephropathy		Non DM nephropathy	
	N=105		N=170	
	75<	75>	75<	75>
eGFR (ml/min/1.73m ²)	21.4 ± 2.3	22.1 ± 4.0	22.1 ± 4.1	22.1 ± 4.5
SBP (mmHg)	121.6 ± 32.2	133.8 ± 20.2	136.5 ± 12.9	135.2 ± 19.5
DBP (mmHg)	82.4 ± 7.0	74.4 ± 16.6*	82.6 ± 7.2	77.1 ± 12.5*
HR (beats/min)	71.4 ± 7.9	69.2 ± 4.5	73.0 ± 7.6	67.8 ± 6.3
Serum albumin (g/dL)	4.0 ± 0.3	3.8 ± 0.6	4.0 ± 0.3	3.8 ± 0.6
Hemoglobin (g/dL)	12.4 ± 1.8	11.2 ± 0.8	12.8 ± 0.7	12.6 ± 0.8
Total cholesterol (mg/dL)	189.2 ± 42.3	177.2 ± 46.3	186.2 ± 32.7	175.1 ± 38.7
Phosphate (mg/dL)	3.7 ± 1.9	3.5 ± 1.0	4.1 ± 2.0	3.5 ± 0.9
Calcium (mg/dL)	9.2 ± 0.6	9.0 ± 0.5	9.1 ± 0.7	9.6 ± 0.4
Urinary protein excretion (g/gCr)	1.34 ± 0.88	1.23 ± 0.90	0.98 ± 1.22	0.88 ± 1.15
HbA1C (%)	6.3 ± 0.4	6.1 ± 0.6	5.2 ± 0.3**	5.1 ± 0.6**

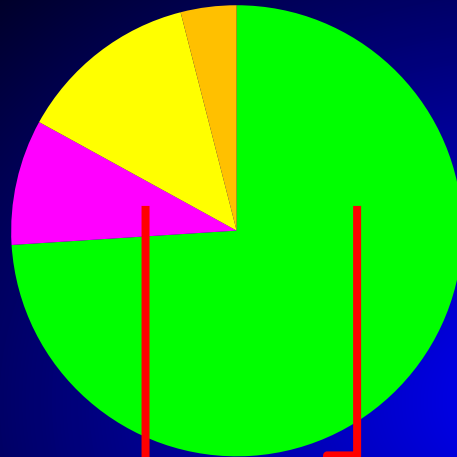
SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rate.

*indicates P<0.05 compared with the values of younger group and

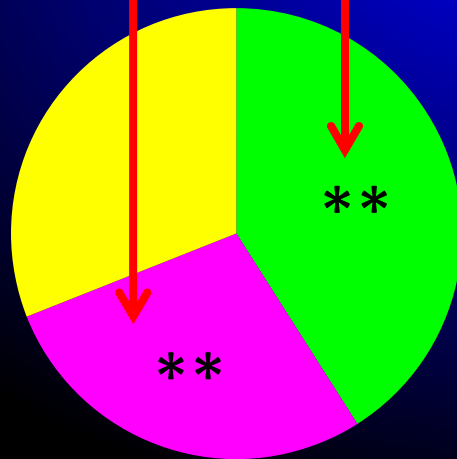
** indicates P<0.01 compared with the patients with DM nephropathy

Comparison of underlying disease of patients between total population and late referral

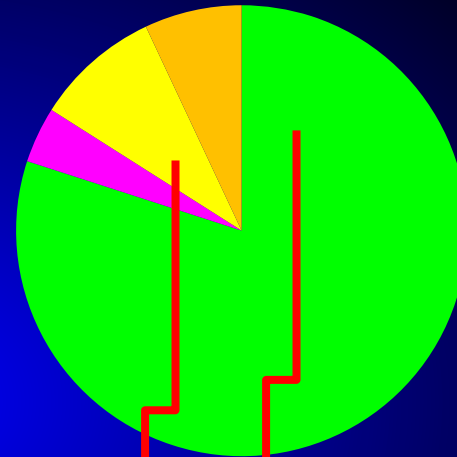
late referral 75<



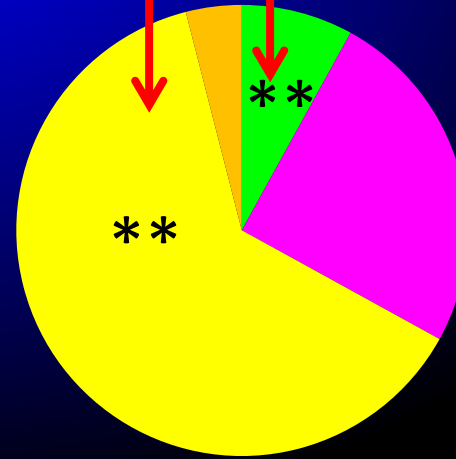
Total 75<



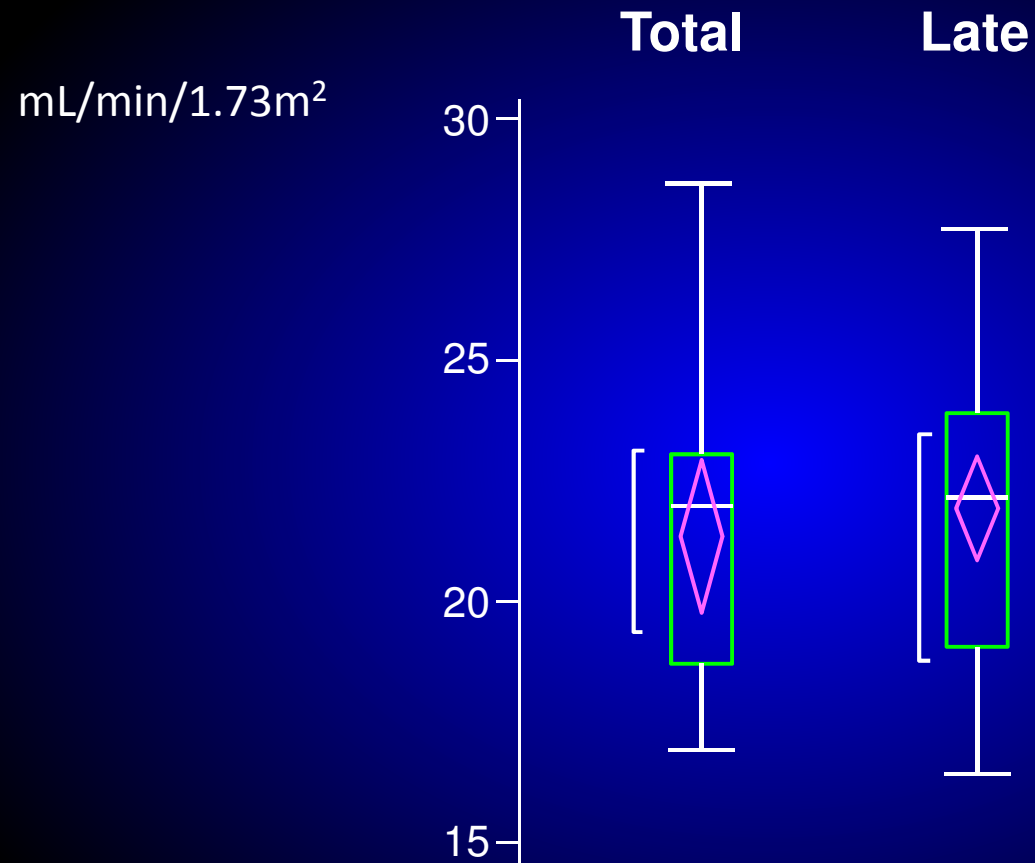
late referral 75>



Total 75>



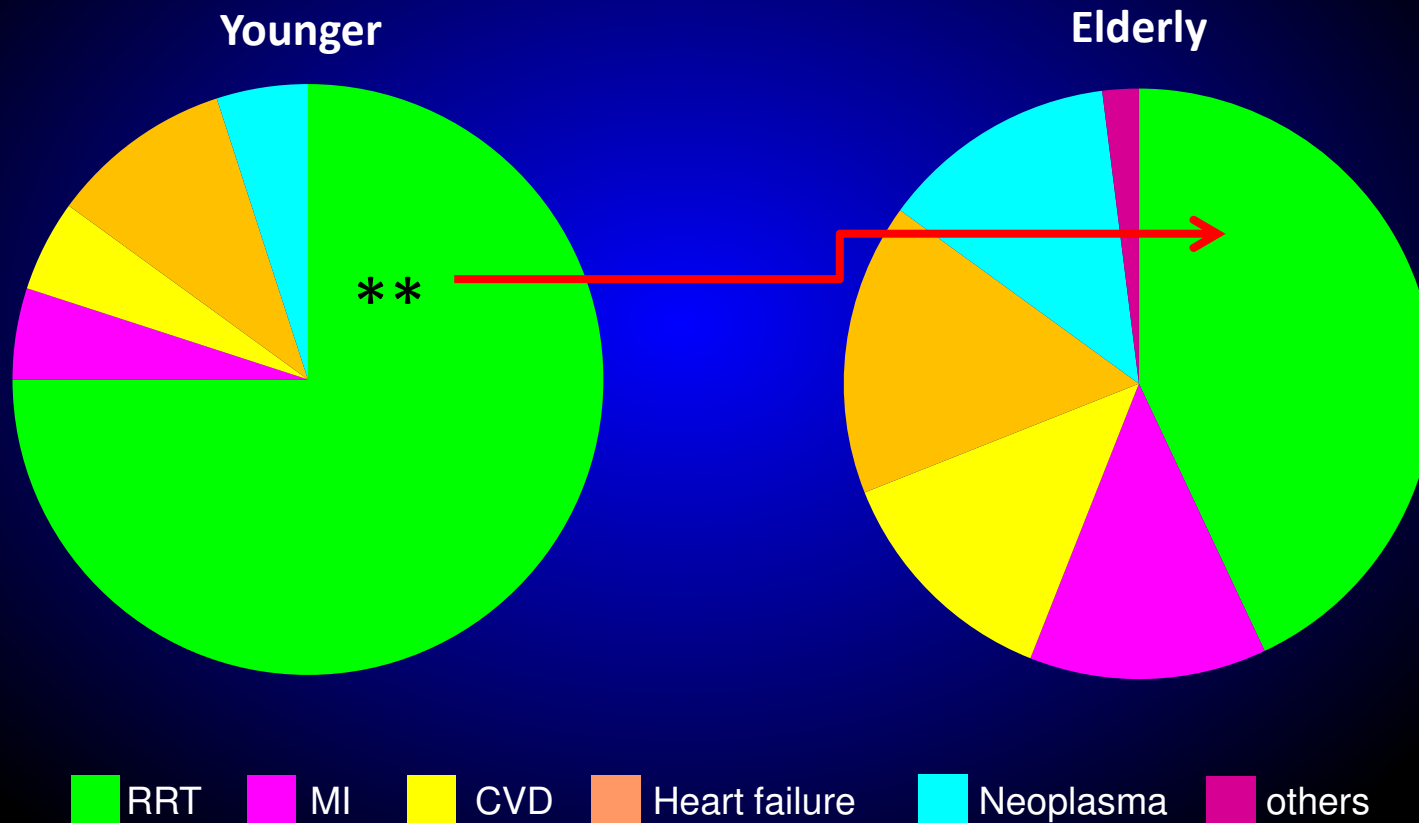
Comparison of eGFR between patients in total population and late referral



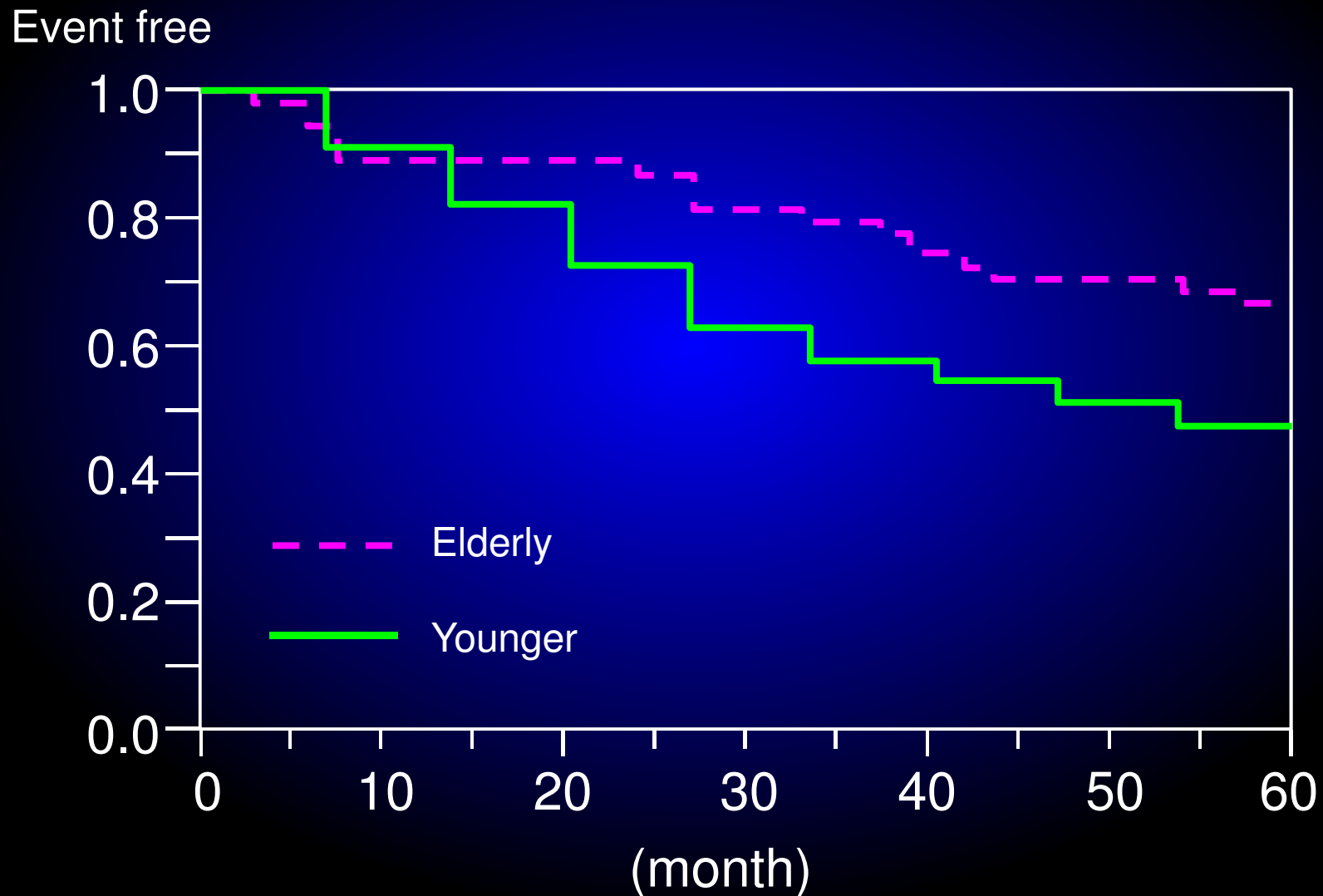
Comparison of baseline characteristics between total population and patients with late referral

Variables	Total (N=218)		Late referral (N=67)	
Age (years)	75<	75>	75<	75>
Gender (male/female)	135(78/57)	83(47/36)	44 (28/16)	23 (11/12)
eGFR (mL/min/1.73 m ²)	21.7 ± 4.3	22.7 ± 3.9	23.1 ± 5.1	23.1 ± 4.9
SBP (mmHg)	128.6 ± 18.2	130.5 ± 16.3	114.5 ± 13.1	141.2 ± 11.9
DBP (mmHg)	81.5 ± 6.7	75.3 ± 15.9	83.6 ± 4.9	73.2 ± 11.4
HR (beats/min)	72.3 ± 6.6	68.1 ± 4.3	71.6 ± 7.5	66.6 ± 7.2
Serum albumin (g/dL)	4.1 ± 0.4	3.9 ± 0.7	3.6 ± 0.9	3.8 ± 1.2
Hemoglobin (g/dL)	12.6 ± 0.7	12.1 ± 0.9	11.3 ± 0.7	11.2 ± 0.9
Total cholesterol (mg/dL)	200.6 ± 35.3	180.8 ± 28.7	201.3 ± 36.7	172.1 ± 35.3
Phosphate (mg/dL)	3.6 ± 1.1	3.3 ± 1.0	5.0 ± 1.8*	4.8 ± 0.7*
Calcium (mg/dL)	9.6 ± 0.5	9.8 ± 0.3	8.1 ± 1.1*	8.4 ± 1.5*
Urinary protein excretion (g/gCr)	1.12 ± 0.66	1.00 ± 0.88	1.42 ± 1.34	1.31 ± 1.21

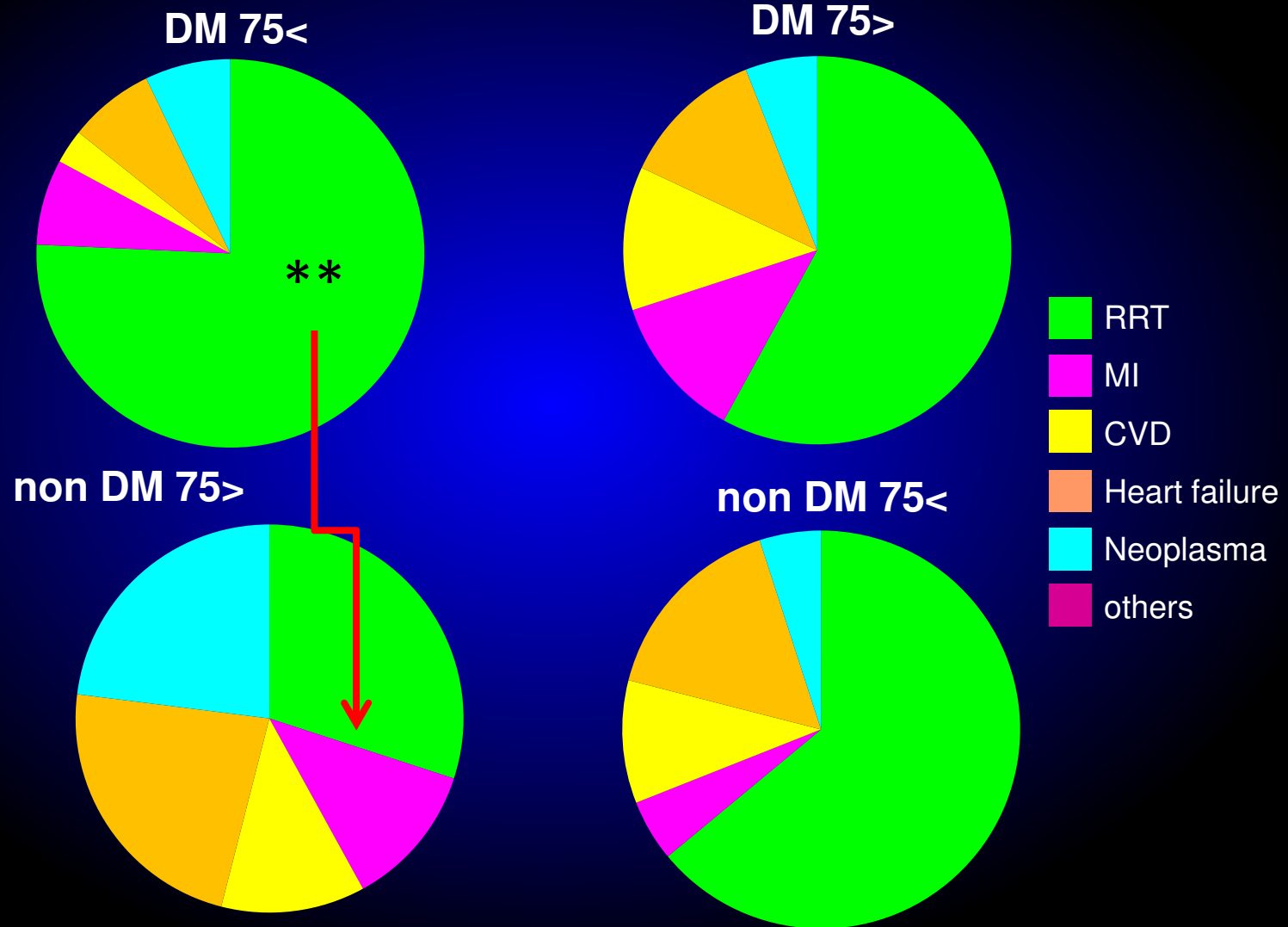
Comparison of events between patients in younger and elderly group



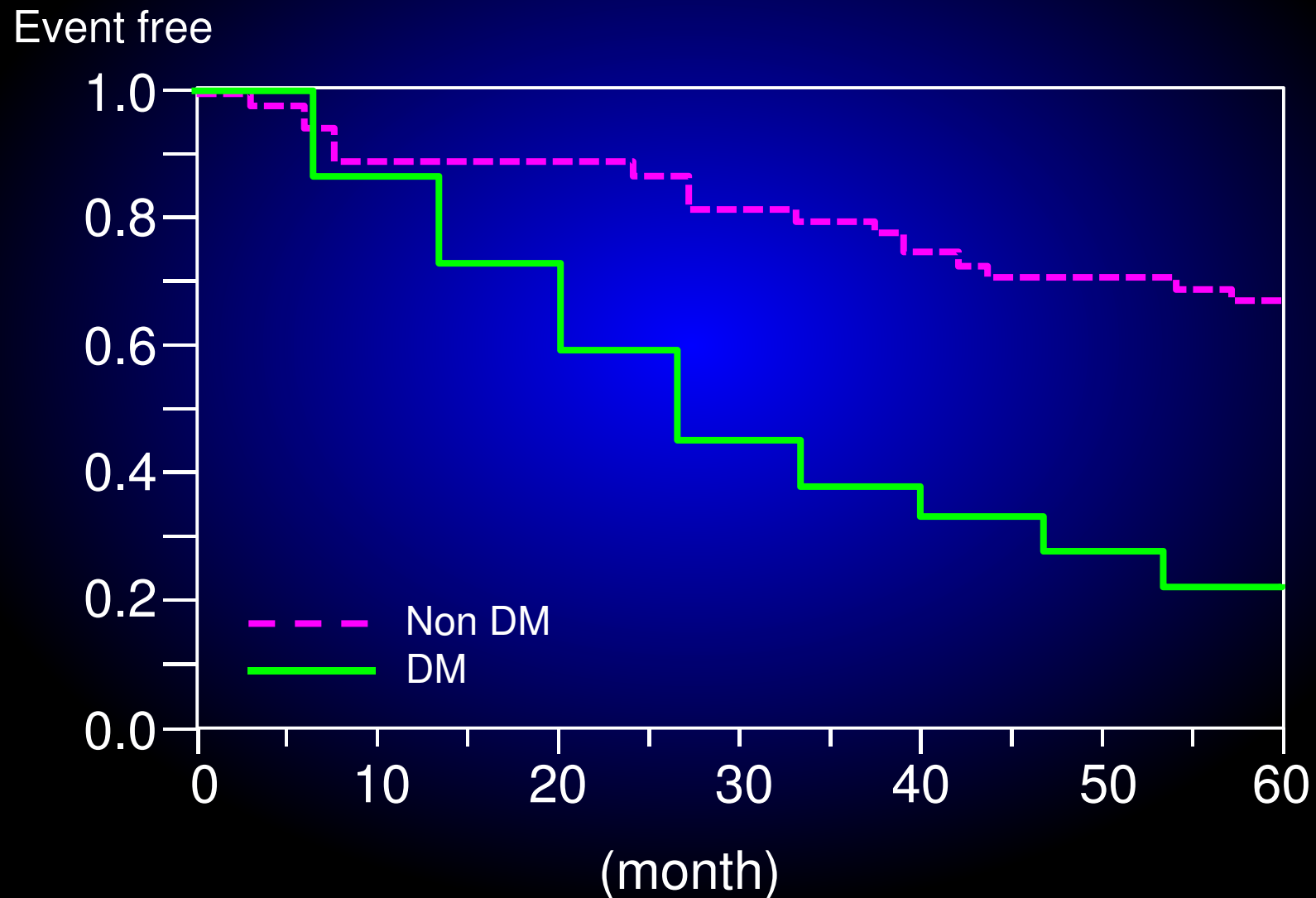
Kaplan Meier curve of event free for patients in younger and elderly group



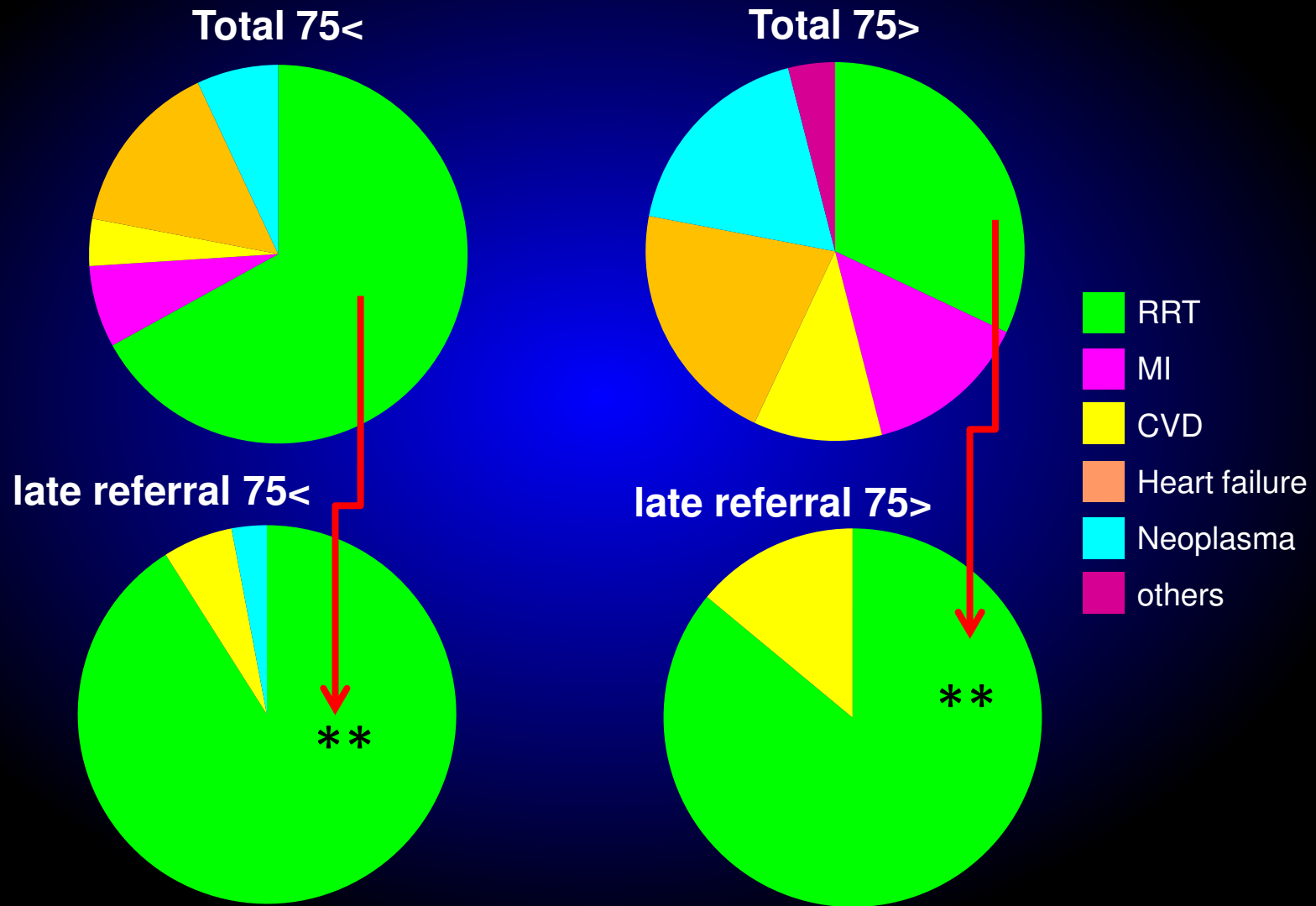
Comparison of events between patients with diabetic nephropathy and non diabetic nephropathy



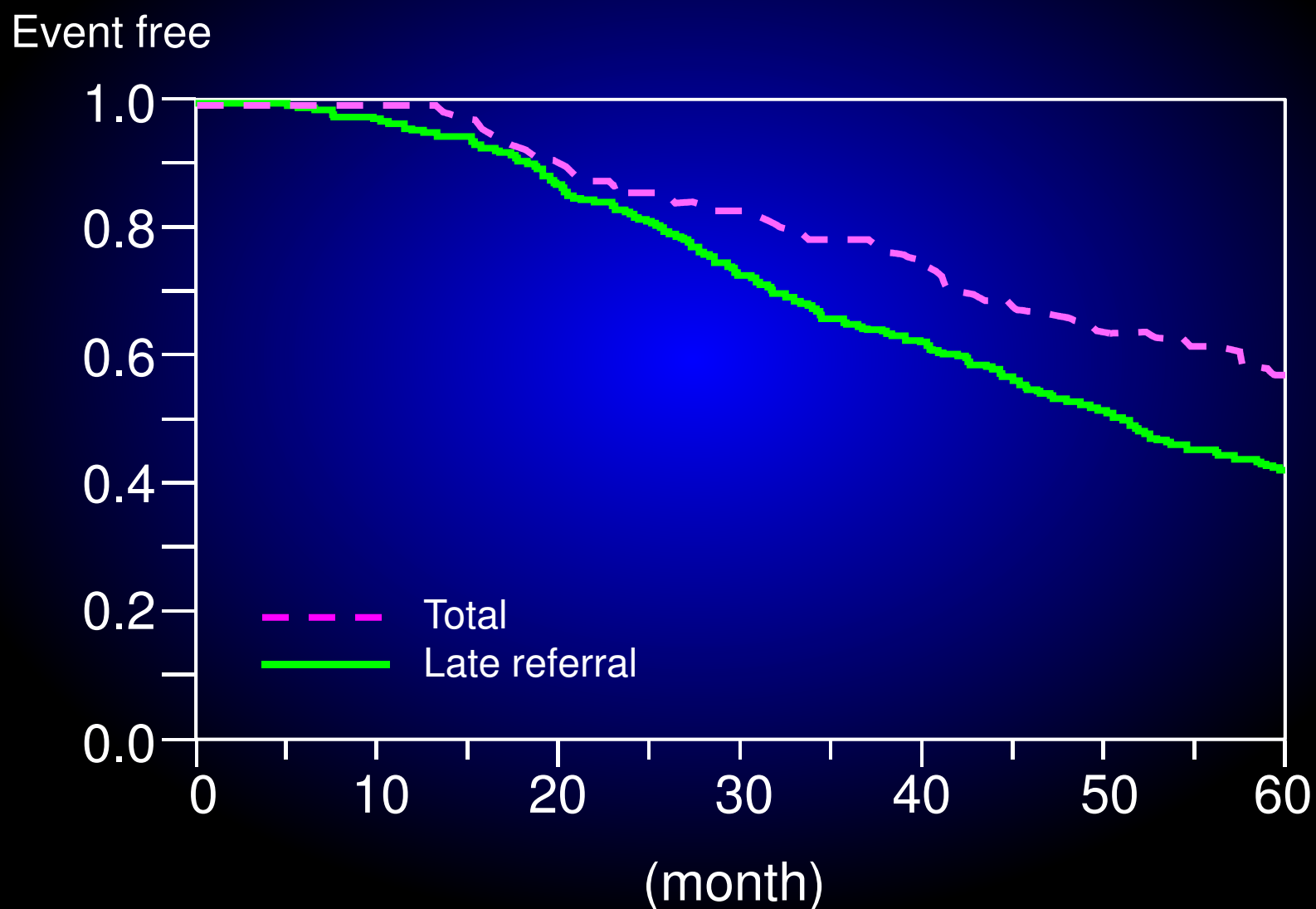
Kaplan Meier Curve of event free in patients with diabetic nephropathy and non diabetic nephropathy



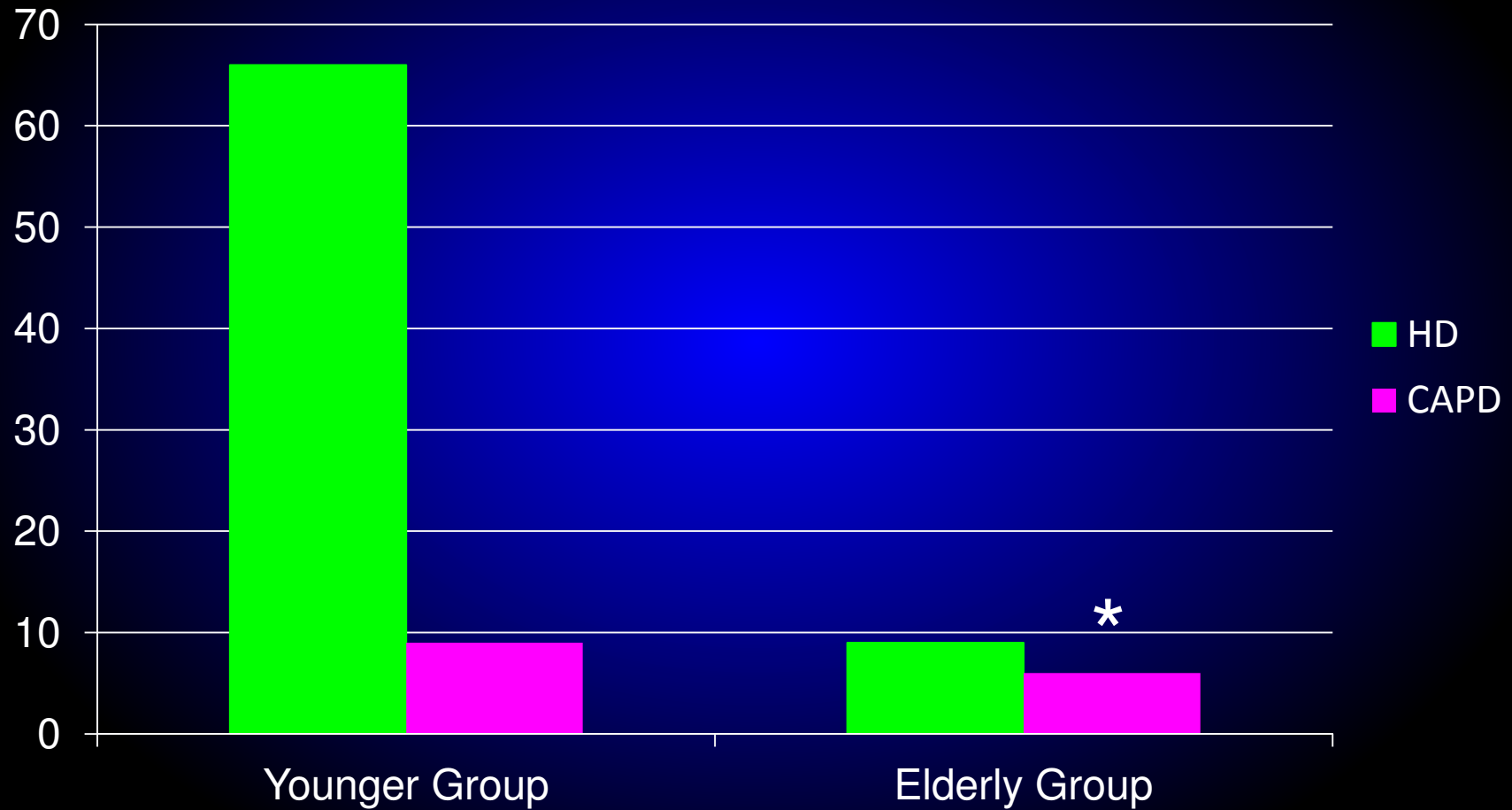
Comparison of events between total population and late referral patients



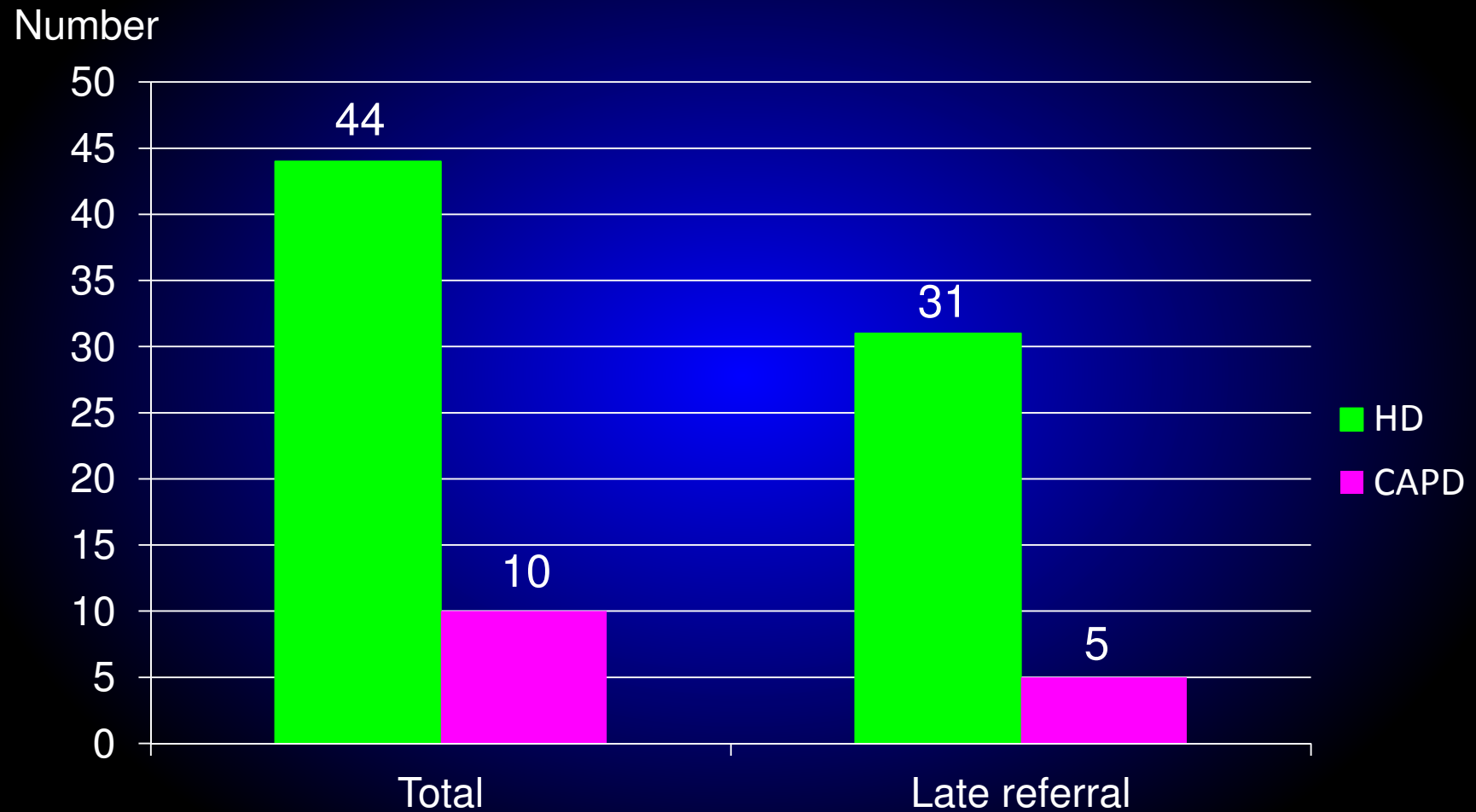
Kaplan Meier curve of event free in late referral patients and total population



Selection of Modalities of Dialysis Therapy



Selection of Modalities



In Summary

1. This 5-year prospective observation study demonstrated that, if elderly people >65 years is divided into 2; 65-74 and >75 years in CKD patients, a proportion of the underlying renal disease was completely different. In the elderly patients >75 years, HT nephrosclerosis and GN were predominant. In contrast, in the patients 65 to 74 years, DM nephropathy was predominant.
2. The ratio of development to RRT was higher in the patients 65 to 74 years, probably being due to a large proportion of DM nephropathy as the leading cause of renal disease.
3. A prognosis of DM nephropathy, regardless of age groups, was poor.
4. A prognosis of the late referral patients was also not well.

Conclusion

In conclusion, it is suggested that in the patients >75 years, the values of eGFR may be overestimated and a prognosis of DM nephropathy was poor. And lastly, the early nephrology referral is encouraged.

**Thank you for your attention.
We are here.**

