CKD and the association of self-assessed lifestyle behaviors with mortality in a large Japanese general population.

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Background ＆ Objective

Few studies have addressed the association of dietary or exercise habits with mortality in CKD patients. Further, it remains unknown whether the associations are different from those in non-CKD general population.

Method

◆Study design◆
A Historical Cohort Study.
Data of time to death were collected up to the end of 2012 for each subject.
Time to death was compared between those with and without each lifestyle behavior at baseline among 140,488 subjects who had all data of these lifestyle behaviors and possible confounders shown below.
Interaction with CKD was tested for each lifestyle behavior.
CKD was defined as eGFR <60ml/min/1.73m^2 or positive dipstick proteinuria.

◆Participants◆
295,297 general population aged 39 to 74 years who received national health checkup in Japan during April 2008 and March 2009.

◆Measurements◆
Self-reported lifestyle behaviors:
<Related to diet>
・ ≥ 3 times/week of breakfast skipping
・ bedtime snacking
・ late-night dinners (within 2 hours of sleep)
・ eating fast (compared to others)
<Related to exercise>
・ walking fast (compared to those with the same age and sex)
・ daily exercise equivalent to walking ≥ 1 hour/day
・ exercise with sweating
    (≥ 30 minutes and ≥ 2 times/week, continued ≥ 1 year)

<Clinical data>
age, sex, systolic and diastolic blood pressure, and history of cardiovascular disease, diabetes, smoking, drinking, body mass index ≥25kg/m^2, triglyceride ≥150mg/dl, high-density lipoprotein cholesterol <40mg/dl, and treatment for blood pressure or lipids.

Discussion

Discussion (1) On dietary habit

It has been reported that skipping breakfast is associated with obesity, diabetes or mortality in general population. But little is known about its association with CKD.[1][2][3]

The findings of the present study show that skipping breakfast is associated with mortality equally in those with and without CKD.

Discussion (2) On walking/exercise habit

It has been reported that walking speed is associated with mortality. [4][5]

Self-reported walking speed could be an index of physical status (i.e. presence of sarcopenia) unlike the other two questionnaires regarding to exercise which question their exercise habits.

It is known that sarcopenia is associated with mortality in CKD patients.[6]

Loss of muscle has been reported to be associated with incidence of CKD.[7][8]

Furthermore, CKD has been reported to evoke sarcopenia associated with inflammation, malnutrition, anemia and insulin resistance.[4][9]

Therefore, the combination of muscle loss and CKD may evoke a vicious cycle.

Conclusion

Among the general Japanese population, having no self-assessed habit of walking fast, no exercise with sweating, and skipping breakfast were associated with an increased risk of all-cause mortality, regardless of having CKD. Mortality risk for those with no habit of walking fast was synergistically increased in CKD patients.

Result

Table.1 Baseline Characristics

	Total (n=140488)	CKD (n=26731)	Non-CKD (n=113757)	P Value
Age, years	63.7	66.3	63.1	< 0.001
Female, %	60.0	47.9	62.9	< 0.001
BMI, Kg/m2	23.2	23.9	23.1	< 0.001
Systolic BP, mmHg	129.0	131.9	127.9	< 0.001
Diastolic BP, mmHg	76.0	77.4	75.7	< 0.001
Past CVD, %	9.0	13.9	7.81	< 0.001
Diabetes, %	10.2	14.5	9.2	< 0.001
Current Smoking, %	12.9	12.2	12.2	< 0.001
Drinking, %	44.8	46.0	44.6	< 0.001
Triglyceride≧150 %	20.1	25.3	18.9	< 0.001
High-density lipoprotein cholesterol <40mg/dl, %	5.2	8.0	4.5	< 0.001
Medication for hypertension or dyslipidemia, %	27.7	40.1	24.7	< 0.001

Abbreviations; BMI:Body Mass Index, BP:Blood Pressure, CKD:Chronic Kidney Disease, CVD:Cardio Vascular Disease

Table.2 Risk of all cause mortality by self-reported lifestyle behaviors in the total subject.

Self-reported habits	P value	HR	95%CI	
exercise with sweating (No)	<0.01	1.19	1.07	1.33
daily exercise equivalent to walking (No)	0.03	1.13	1.01	1.26
walking fast (No)	<0.01	1.45	1.31	1.61
late-night dinners (Yes)	0.08	1.12	0.99	1.27
bedtime snacking (Yes)	0.06	0.86	0.74	1.01
breakfast skipping (Yes)	<0.01	1.27	1.09	1.48
eating fast (Yes)	0.69	1.02	0.92	1.14

Table.3 Risk of all cause mortality by self-reported lifestyle behaviors in CKD and non-CKD subjects.

Non-CKD (n=113757,Death=1175)				CKD (n=26731,Death=498)				P value for interaction CKD vs non-CKD
	P value	HR	95%CI		P value	HR	95%CI	
exercise with sweating (No)	<0.01	1.19	1.04 1.36	exercise with sweating (No)	0.04	1.23	1.01 1.51	0.12
daily exercise equivalent to walking (No)	0.18	1.09	0.96 1.24	daily exercise equivalent to walking (No)	0.06	1.21	0.99 1.48	0.07
walking fast (No)	<0.01	1.40	1.24 1.58	walking fast (No)	<0.01	1.64	1.36 2.00	0.04
late-night dinners (Yes)	0.11	1.13	0.97 1.31	late-night dinners (Yes)	0.29	1.13	0.90 1.42	0.97
bedtime snacking (Yes)	0.17	0.88	0.73 1.06	bedtime snacking (Yes)	0.18	0.82	0.62 1.09	0.93
breakfast skipping (Yes)	0.03	1.23	1.02 1.47	breakfast skipping (Yes)	0.02	1.39	1.05 1.83	0.37
eating fast (Yes)	0.58	1.04	0.91 1.18	eating fast (Yes)	0.85	0.98	0.80 1.20	0.70

Hazard ratio

P value for interaction CKD vs non-CKD = 0.04

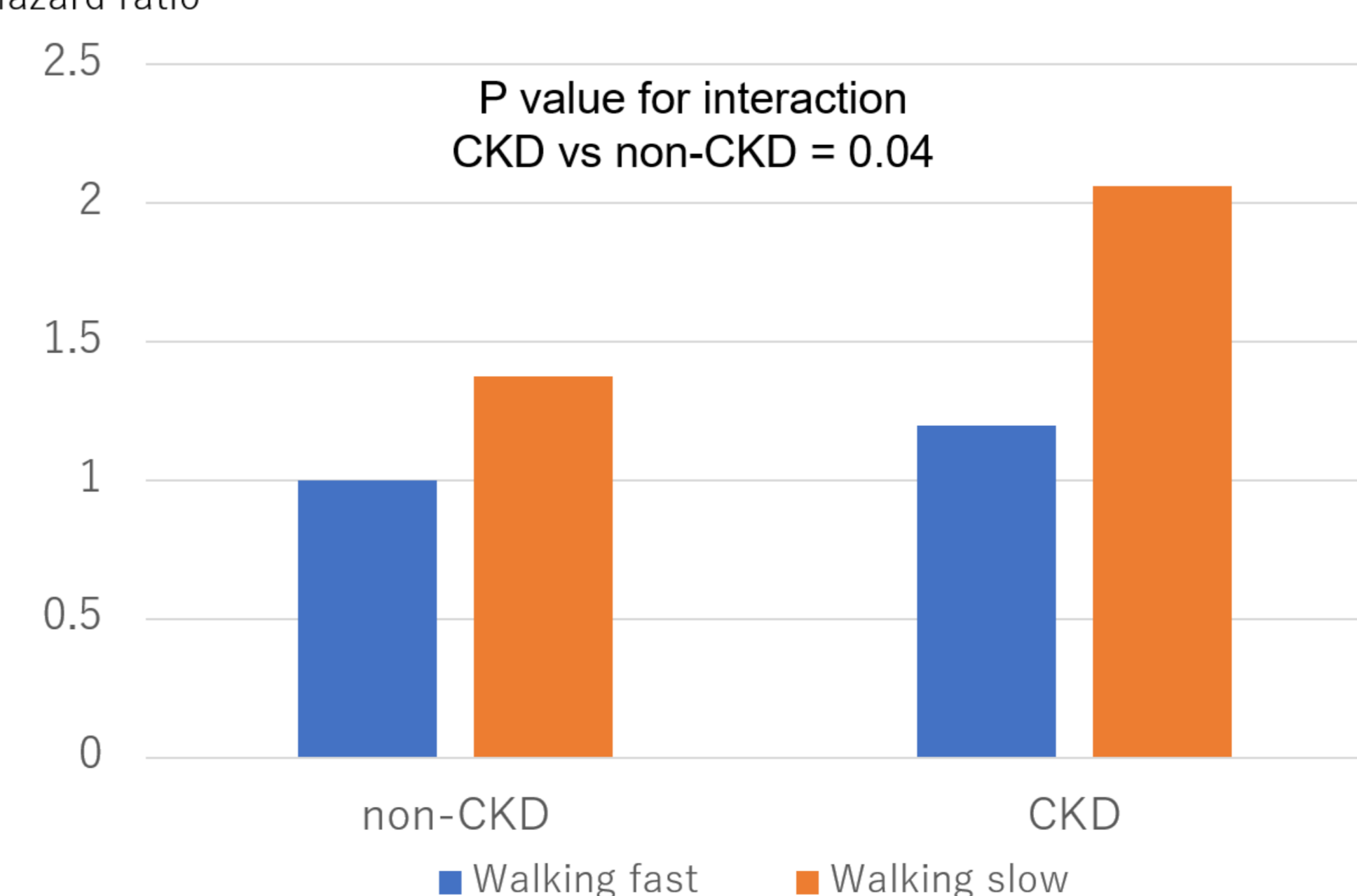Walking fast / Walking slow (non-CKD, CKD)

Figure
Hazard ratio of all-cause mortality by self-reported habit of walking speed in subject with non-CKD and CKD (non-CKD and walking fast as reference).

Reference
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