

中文題目：冠狀動脈疾病病人 triglyceride glucose index 與腎功能衰退之關聯性

英文題目：Association between triglyceride-glucose index and renal function decline in patient with coronary artery disease

作者：周睿頤<sup>1</sup>、周睿信<sup>2</sup>、黃柏勳<sup>2</sup>

服務單位：<sup>1</sup>臺北榮民總醫院內科部 <sup>2</sup>臺北榮民總醫院重症醫學部

## Background

Triglyceride-glucose index (TyG index) was initially made as a predictive marker for insulin resistance (IR), and was calculated as:  $\ln [\text{fasting triglycerides (mg/dL)} \times \text{fasting plasma glucose (mg/dL)} / 2]$ . TyG index was reported to be associated with the severity of diabetes, microalbuminuria, coronary artery disease (CAD), and non-alcoholic fatty liver disease. However, current evidence supported the relationship between TyG index and long-term renal function decline was absent. In this single-center retrospective study, we investigated the association between TyG index and renal function decline in patients with CAD.

## Methods

After excluding patients with pre-dialysis and without angiographically significant CAD, 403 patients admitted for elective percutaneous coronary intervention (PCI) were enrolled. Blood samples were collected after at least 8h fasting, and TyG index was calculated accordingly. The patients were stratified by TyG index tertiles. The patients were followed for at least 1 year or until the occurrence of renal function decline, which was defined as doubling of baseline creatinine level.

## Results

Patients in the high TyG index tertile were younger, with higher body mass index (BMI), higher prevalence of diabetes, and higher fasting glucose levels. There was no significant difference of proteinuria and baseline creatinine among the tertiles. In the mean follow-up duration of 20.6 months, 8 (1.9%) cases of mortality and 37 (9.2%) cases of renal function decline were identified. Patients in the higher TyG index tertile was with significantly greater incidence of renal function decline (log rank  $p = 0.0038$ ). In the multivariate Cox regression analysis, patients in the high TyG index tertile remained significantly associated with higher risk of renal function decline after adjusting for age and baseline creatinine (adjusted HR: 2.70, 90% CI: 1.20-6.07,  $p = 0.016$ ).

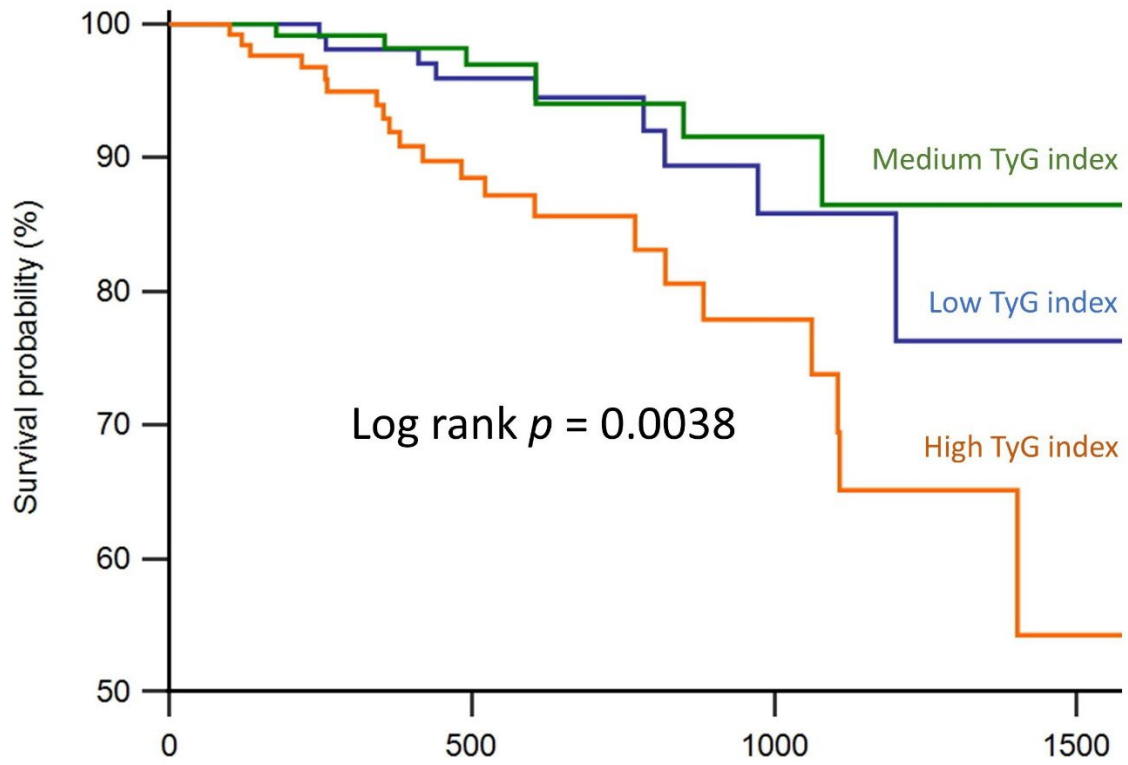
## Conclusion

In the CAD population, patients with higher TyG index were associated with higher risk of renal function decline after PCI.

**Table 1.** Baseline characteristics and outcomes of coronary patients grouped by the values of TyG index

	<b>Tertile 1</b> (n = 135) Low TyG index 3.61-4.21	<b>Tertile 2</b> (n = 134) Medium TyG index 4.21-4.43	<b>Tertile 3</b> (n = 134) High TyG index 4.43-5.33	<b>P value</b>
Age (years)	72.2±12.3	70.5±10.9	66.0±12.1	<0.001
Male, n(%)	97 (71.9%)	93 (69.4%)	95 (70.9%)	0.906
BMI (kg/m <sup>2</sup> )	24.5 ± 4.0	26.4 ± 3.7	26.4±4.6	<0.001
<b>Comorbidities, n (%)</b>				
Hypertension	93 (68.9%)	101 (75.4%)	95 (70.9%)	0.482
Diabetes	32 (23.7%)	37 (27.6%)	73 (54.5%)	<0.001
Heart failure	20 (14.8%)	7 (5.2%)	11 (8.2%)	0.022
Proteinuria	9 (6.8%)	11 (8.3%)	17 (12.9%)	0.204
<b>Medications, n (%)</b>				
ACEi or ARB	42 (31.1%)	52 (38.8%)	52 (38.8)	0.317
Diuretics	16 (11.9%)	14 (10.4%)	17 (12.7%)	0.847
Oral antidiabetic agents	17 (12.6%)	26 (19.4%)	44 (32.8%)	<0.001
Insulin	3 (2.2%)	5 (3.7%)	21 (15.7%)	<0.001
<b>Laboratory data</b>				
Baseline serum creatinine (mg/dl)	1.28±0.96	1.17±0.58	1.44±1.29	0.086
Fasting glucose (mg/dL)	94.9±17.3	104.3±21.1	131.5±42.7	<0.001
Fasting triglyceride (mg/dl)	69.4±19.2	110.4±21.9	172.4±55.6	<0.001
<b>Outcomes, n (%)</b>				
Renal function decline	9 (6.7%)	7 (5.2%)	21 (15.7%)	0.006
All-cause mortality	5 (3.7%)	1 (0.7%)	2 (1.5%)	0.195

**Figure 1.** Kaplan–Meier curves of freedom from renal function decline in patients stratified by TyG index.



Number at risk	Follow-up duration (days)		
Group: low			
135	78	22	3
Group: medium			
134	76	31	6
Group: high			
134	69	24	5