

中文題目:糖尿病增加末期腎衰竭透析患者死亡及急性冠心症風險

英文題目:Diabetes as a risk for all-cause mortality and acute coronary syndrome in end-stage renal disease dialysis patients

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Abstract

Background: Diabetes mellitus (DM) is the leading cause of end-stage renal disease (ESRD). The aim of this study was to investigate whether DM is associated with all-cause mortality and acute coronary syndrome (ACS) in ESRD dialysis patients.

Methods: This longitudinal cohort study examined the medical claims in the Taiwan National Health Insurance Research Database of ESRD patients who initiated dialysis between 1999 and 2007. The patients were followed from the initiation of dialysis until death, end of dialysis, or 31 December 2008. These patients were stratified by with and without DM at baseline. Main outcomes measured were all-cause mortality and acute coronary syndrome after dialysis. Outcomes were calculated by Kaplan-Meier methods and Cox proportional hazards models.

Results: A total of 67,078 incident ESRD dialysis patients were Enrolled in this study. Of these patients, 33,794 patients had DM, and the other did not have DM. ESRD patients with DM tended to be older than those without DM. The patients with DM had more comorbidities than those without DM except systemic lupus erythematosus and polycystic kidney disease (Table 1). The 1-, 5-, and 9-year cumulative survival rate were 90%, 52% and 34% in patients with DM, and 94%, 72% and 56% in those without DM (Figure 1a). The 1-, 5-, and 9-year cumulative incidence rate of ACS were 4%, 15%, and 22% in patients with DM and 2%, 6% and 9% in those without DM (Figure 1b). After multivariate adjustment, patients with DM was associated with 64% higher death risk (HR: 1.64, 95% CI: 1.60-1.69) and 88% higher ACS risk (HR: 1.88, 95% CI: 1.77-2.00) (Table 2).

Conclusion: Diabetes was associated with risk of all-cause mortality and ACS in ESRD dialysis patients. More attention should be paid when treating these high-risk patients.

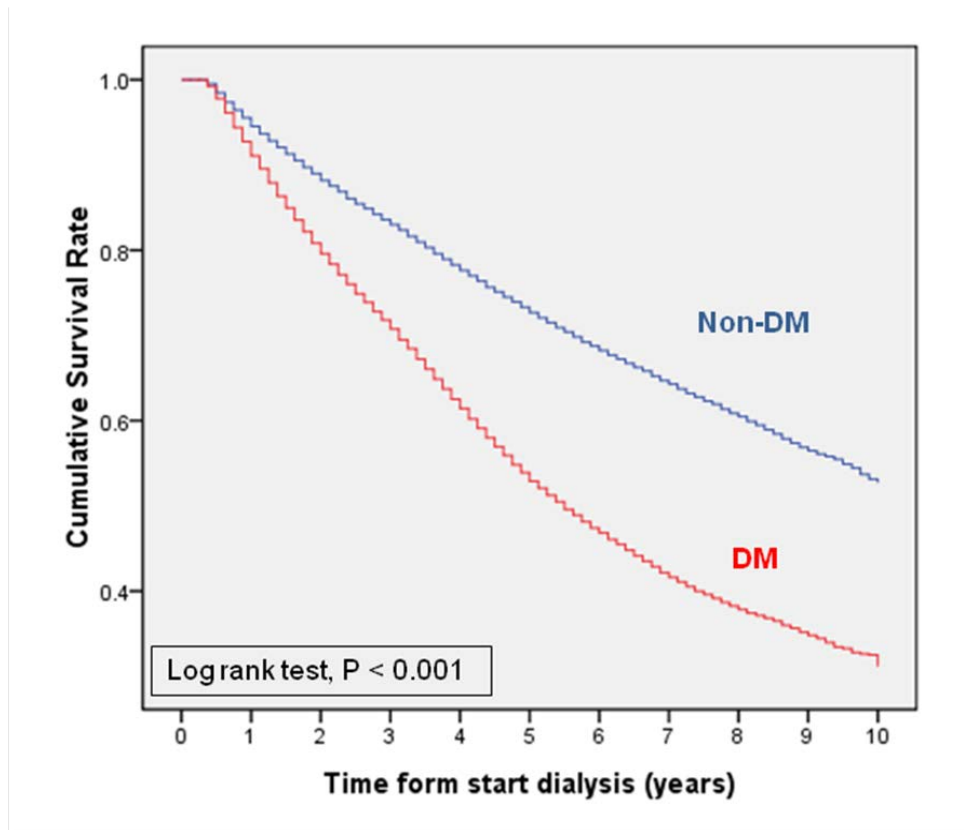
Table 1. Patients characteristics and association with (n = 33,794) and without (n = 33,284) diabetic mellitus in end-stage renal disease dialysis patients.

	Without Diabetes (n=33,284)		With Diabetes (n=33,794)		P-value
	n	(%)	n	(%)	
Gender					<0.001
Female	17600	(52.90)	16936	(50.10)	
Male	15684	(47.10)	16858	(49.90)	
Age at start of Dialysis (years)					<0.001
<45	7172	(21.50)	2229	(6.60)	
45-64	12743	(38.30)	16556	(49.00)	
≥ 65	13369	(40.20)	15009	(44.40)	
Urbannization of residential area					<0.001
Urban	11364	(34.10)	10440	(30.90)	
Suburban	13798	(41.50)	14283	(42.30)	
Rural	8122	(24.40)	9071	(26.80)	
Baseline comorbidity					
Congestive Heart Failure					<0.001
No	28168	(84.60)	21955	(65.00)	
Yes	5116	(15.40)	11839	(35.00)	
Coronary Artery Disease					<0.001
No	28412	(85.40)	23157	(68.50)	
Yes	4872	(14.60)	10637	(31.50)	
Cerebrovascular Disease					<0.001
No	30758	(92.40)	27973	(82.80)	
Yes	2526	(7.60)	5821	(17.20)	
Peripheral Vascular Disease					<0.001
No	32060	(96.30)	32060	(94.90)	
Yes	1224	(3.70)	1734	(5.10)	
Other Cardiac^a					<0.001
No	30628	(92.00)	30520	(90.30)	
Yes	2656	(8.00)	3274	(9.70)	
Dysrhythmia					<0.001
No	31326	(94.10)	31522	(93.30)	
Yes	1958	(5.90)	2272	(6.70)	
Dyslipidemia					<0.001
No	30261	(90.90)	24388	(72.20)	

Yes	3023	(9.10)	9406	(27.80)	
Chronic Obstructive Pulmonary Disease					<0.001
No	30478	(91.60)	30406	(90.00)	
Yes	2806	(8.40)	3388	(10.00)	
Gastrointestinal Bleeding					<0.001
No	26264	(78.90)	25865	(76.50)	
Yes	7020	(21.10)	7929	(23.50)	
Liver Disease					<0.001
No	30664	(92.10)	30837	(91.20)	
Yes	2620	(7.90)	2957	(8.80)	
Cancer					<0.001
No	30828	(92.60)	32121	(95.00)	
Yes	2456	(7.40)	1673	(5.00)	
Systemic lupus erythematosus					<0.001
No	32584	(97.90)	33721	(99.80)	
Yes	700	(2.10)	73	(0.20)	
Polycystic kidney disease					<0.001
No	32437	(97.50)	33649	(99.60)	
Yes	847	(2.50)	145	(0.40)	

^aIncludes pericarditis, endocarditis, myocarditis, other complications of heart disease, heart transplant, heart valve replacement, and cardiac devices.

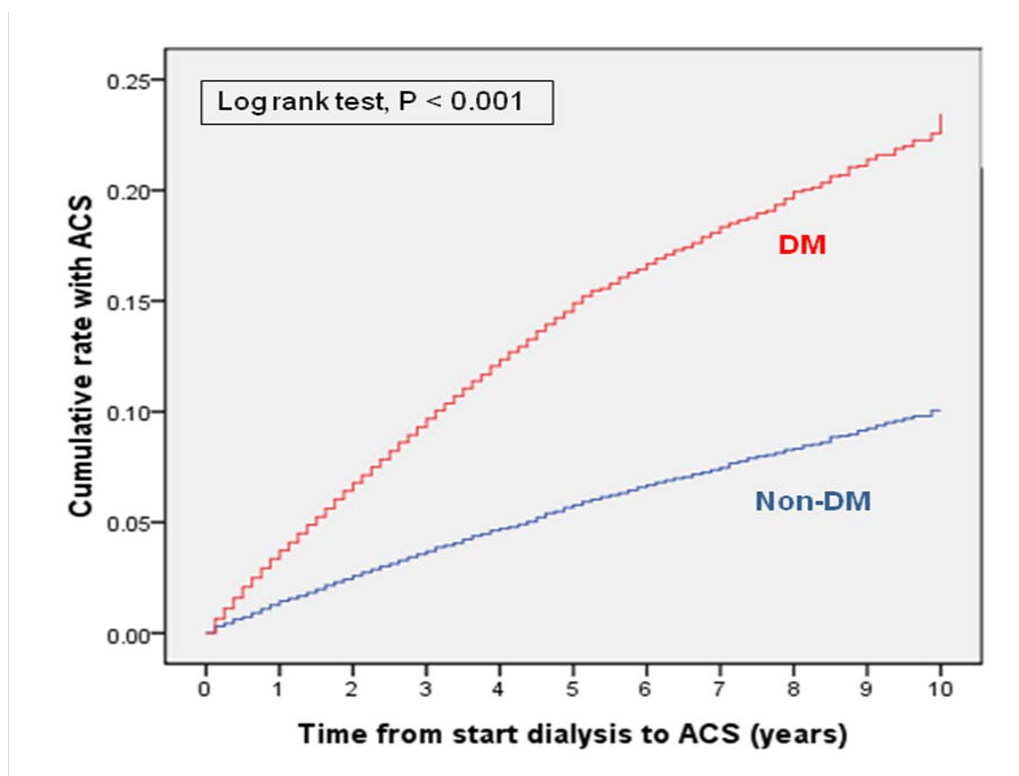
Figure 1a. Survival curves after initiation of dialysis stratified by diabetic mellitus (DM) and non-DM in end-stage renal disease dialysis patients.



Cumulative survival rate:

	1-year	3-year	5-year	7-year	9-year
Non-DM	94 %	82 %	72%	64%	56%
DM	90 %	69 %	52%	41%	34%

Fig 1b. Cumulative incidence of acute coronary syndrome (ACS) after initiation of dialysis stratified by diabetic mellitus (DM) and non-DM in end-stage renal disease.



Cumulative ACS rate:

	1-year	3-year	5-year	7-year	9-year
Non-DM	2 %	4 %	6%	8%	9%
DM	4%	10%	15%	19%	22%

Table 2. Risk factor for all-cause mortality and acute coronary syndrome (ACS) after initiation of dialysis in end-stage renal disease dialysis patients

Covariate	Multivariate analysis for	Multivariate analysis for
	mortality	ACS
	HR [§] (95% CI)	HR [§] (95% CI)
Sex (Male v Female)	1.159 (1.130-1.189)*	1.266 (1.199-1.336)*
Age (year; each increment of 1 year)	1.039 (1.038-1.040)*	1.017 (1.017-1.022)*
Urbannization of residential area		
Urban	1	1
Suburban	1.018 (0.988-1.049)	1.140 (1.070-1.214)*
Rural	1.140 (1.103-1.19)*	1.082 (1.006-1.163)*
Diabetic mellitus (yes v no)	1.639 (1.595-1.685)*	1.883 (1.771-2.003)*
Congestive Heart Failure (yes v no)	1.228 (1.192-1.265)*	1.294 (1.218-1.375)*
Coronary Artery Disease (yes v no)	1.100 (1.068-1.134)*	2.172 (2.047-2.305)*
Cerebrovascular Disease (yes v no)	1.283 (1.240-1.327)*	1.042 (0.966-1.123)
Peripheral Vascular Disease (yes v no)	1.079 (1.019-1.141)*	1.124 (1.002-1.261)*
Other Cardiac ^a (yes v no)	1.044 (1.001-1.089)	1.073 (0.985-1.169)
Dysrhythmia (yes v no)	1.115 (1.065-1.167)*	1.172 (1.067-1.288)*
Dyslipidemia (yes v no)	0.977 (0.945-1.011)	1.402 (1.317-1.492)*
Chronic Obstructive Pulmonary Disease (yes v no)	1.105 (1.063-1.149)*	0.923 (0.845-1.008)
Gastrointestinal Bleeding (yes v no)	1.169 (1.135-1.203)*	1.031 (0.967-1.009)
Liver Disease (yes v no)	1.268 (1.216-1.322)*	0.846 (0.9760-0.941)*

Cancer (yes v no)	1.502 (1.435-1.573)*	0.794 (0.693-0.910)*
Systemic lupus erythematosus (yes v no)	1.233 (1.040-1.462)	0.976 (0.671-1.421)
Polycystic kidney disease (yes v no)	0.955 (0.846-1.079)	0.951 (0.724-1.247)

*P<0.05

§HR adjusted for sex, age, urbannization of residential area, and comorbdities.

^aIncludes pericarditis, endocarditis, myocarditis, other complications of heart disease, heart transplant, heart valve replacement, and cardiac devices