

Clinical characteristics, average outpatient charge per visit, and major adverse cardiovascular events in patients with diagnosed chronic kidney disease combined with cardiovascular disease: a study from a large healthcare database in China

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Background

Chronic kidney disease (CKD) has become an important global public health challenge, particularly in China. The combination of CKD and cardiovascular disease (CVD) significantly increases the occurrence of cardiovascular events and the medical expenses, particularly for patients with dialysis. It is important to understand the clinical characteristics, average outpatient charge per visit, and major adverse cardiovascular events (MACE) among these patients to improve secondary prevention. However, the situation in China remains under-investigated.

Results

A total of 25,935 patients with CKD and CVD were identified, including 24,366 non-dialysis and 1569 dialysis subjects. The proportion of male patients in dialysis patients is higher than that of non-dialysis patients (62.0% vs. 49.6%, $P < 0.001$). The proportion of patients with dialysis presenting with hypertension (91.6% vs. 67.4%, $P < 0.001$), heart failure (14.4% vs. 5.4%, $P < 0.001$), and atrial fibrillation (6.9% vs. 2.6%, $P < 0.001$) was significantly higher than that of patients without dialysis. Average outpatient charge per visit for the dialysis patients was much larger than that of non-dialysis patients (3281.7¥ vs. 260.3¥, $P < 0.001$). The proportion of experienced MACE in dialysis patients was higher than that of non-dialysis patients (14.8% vs. 8.9%, $P < 0.001$).

Methods

We included adults with electronic health records (2020.01-2021.12) in Xuzhou, China. Clinical diagnosis of CKD and CVD was established based on the presence of diagnostic keywords and International Classification of Disease (ICD)-10 codes. patients were further categorized into subgroups based on whether they received dialysis.

Conclusion

Among patients with both CKD and CVD, complications in dialysis patients are significantly more complex than in non-dialysis patients. Additionally, the average outpatient charge per visit for dialysis patients is noticeably higher compared to non-dialysis patients. Moreover, special attention should be paid to the occurrence of MACE in patients undergoing dialysis.

	Non-dialysis(n=24366)	Dialysis(n=1569)	t/ χ^2	P
Demographics				
Female (n, %)	12272 (50.4)	597 (38.0)	88.9	< 0.001
Age (year)	59.8±16.1	53.6±13.8	17.2	< 0.001
Complications (n, %)				
Ischemic stroke	15302 (62.8)	655 (41.7)	275.2	< 0.001
Hypertension	16423 (67.4)	1437 (91.6)	401	< 0.001
Heart failure	1309 (5.4)	226 (14.4)	214.3	< 0.001
Arial fibrillation	645 (2.6)	108 (6.9)	92.3	< 0.001
Peripheral vascular disease	13061 (53.6)	567 (36.1)	179.6	< 0.001
Type 2 diabetes	4803 (19.7)	483 (30.8)	110.7	< 0.001
Renal anemia	1095 (4.5)	990 (63.1)	6839.8	< 0.001
CKD-MBD	278 (1.1)	395 (25.2)	3359.3	< 0.001
Average outpatient charge per visit	260.3	3281.7	-	< 0.001
MACE* (n, %)	2157 (8.9)	232 (14.8)	61.3	< 0.001
All-cause death [#]	19 (0.1)	0 (0.0)	-	0.627
Hospitalizations due to heart failure	1001 (4.1)	72 (4.6)	0.7	0.389
Non-fatal myocardial infarctions	254 (1.0)	154 (9.8)	727.0	< 0.001
Non-fatal strokes	1108 (4.5)	48 (3.1)	7.3	0.007