

# Acute Cholecystitis in Patients on Dialysis: A Nationwide Population-based Cohort Study in Korea

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# Aims

- Determine the incidence and risk of acute cholecystitis requiring cholecystectomy in the dialysis population
- Investigate the clinical characteristics and differences among the dialysis modalities in patients with end-stage renal disease (ESRD)

# Methods

- The data on patients undergoing dialysis were obtained from the National Health Information database
- All incidental patients with ESRD who underwent dialysis for more than 3 months and were diagnosed between 2004 and 2013 in Korea
- The control cohort was selected from the KNHIS NSC that consisted of both healthy individuals and patients, including those with chronic kidney disease, ESRD, and transplantation
- The incidence of acute cholecystitis was investigated using ICD-10 codes

# Characteristics of the dialysis patients and controls

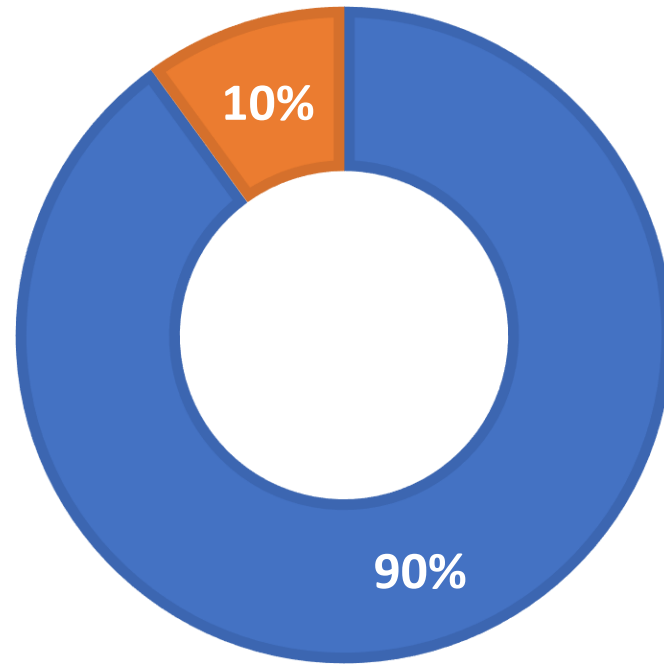
Characteristics	Dyalysis patients, No. (%) (n=59,999)	Controls, No. (%) (n=59,999)	<i>P</i> value
Sex			<0.0001
Male	34,772 (58)	31,838 (53.1)	
Female	25,227 (42.1)	28,161 (47)	
Income level			<0.0001
Low	23,301 (38.9)	17,210 (28.7)	
Middle	18,446 (30.8)	21,472 (35.8)	
High	18,252 (30.5)	21,317 (35.6)	
CCI score			<0.0001
1	6,400 (10.7)	5,326 (8.9)	
2	6,332 (10.6)	5,611 (9.4)	
3	47,267 (78.8)	49,062 (81.8)	

# Characteristics of the dialysis patients and controls

Comorbidities	Dyalysis patients, No. (%) (n=59,999)	Controls, No. (%) (n=59,999)	<i>P</i> value
Diabetes mellitus	43,591 (72.7)	43,062 (71.8)	<0.0001
Hypertension	53,253 (88.8)	55,006 (91.7)	0.0005
Hyperlipidemia	40,773 (68)	42,083 (70.2)	0.0006
Connective tissue disease	53,04 (8.9)	10,172 (17)	<0.0001
Myocardial infarction	6,877 (11.5)	6,211 (10.4)	<0.0001
Heart failure	19,470 (32.5)	15,240 (25.5)	<0.0001
Peripheral vascular disease	18,687 (31.2)	27,393 (45.7)	<0.0001
Severe liver disease	2,016 (3.4)	2,424 (4.1)	<0.0001
Dementia	3,495 (5.9)	9,591 (16)	<0.0001
Atrial fibrillation	3,637 (6.1)	4,685 (7.9)	<0.0001

# Dialysis modality

■ Hemodialysis ■ Peritoneal dialysis



# Characteristics of the cholecystitis cases among the dialysis patients and controls

Characteristics		Dialysis patients (n=59,999)			Controls (n=59,999)			IRR (95% CI)
		No. (%)	PY	IR	No. (%)	PY	IR	
All		3940 (8.2)	205,456	19	647 (1.4)	271,419	2	8.04 (7.40-8.76)
Sex	Male	2298 (4.8)	117,146	20	370 (0.8)	140,807	3	7.47 (6.69-8.35)
	Female	1642 (3.4)	88,310	19	277 (0.6)	130,612	2	8.77 (7.71-9.99)

PY, person-years; IR, incidence ratio; IRR, incidence rate ratio; CI, confidence interval



	All cases (n)	Cholecystitis cases (n, %)	Crude HR (95% CI)	Adjusted HR (95% CI)
<b>Type of dialysis</b>				
<b>No dialysis</b>	59,999	647 (1.1)	1.00	1.00
<b>Hemodialysis</b>	54,103	3558 (6.6)	8.83 (8.08-9.64)	8.01 (7.36-8.71)
<b>Peritoneal dialysis</b>	5,896	382 (6.5)	10.23 (8.98-11.66)	9.14 (8.05-10.37)

# Key messages

- Patients with ESRD undergoing dialysis were associated with an 8,91-fold higher risk of acute cholecystitis than the matched control group
- Percutaneous cholecystitis is a option for the bridging method or palliative treatment