

## Cause of death in ankylosing spondylitis: data from the national health claims database 2017 in Korea

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**Background/Aims:** To investigate immune-modulating agent related risk of mortality and to investigate cause of death (COD) in real world clinical practice with ankylosing spondylitis (AS)

**Methods:** Data were collected from the national health claims database. Patients who had at least one claim for AS (KCD10 code M45) in 2017 were included in the study. Immune-modulating agents were classified as group 1: glucocorticoid, group 2: conventional disease modifying antirheumatic drug (DMARD), group 3: biologic DMARD. We estimated sex- and age-, health insurance payment amount adjusted odds ratio of death during the period. The leading COD was identified by death certificate registered in ministry of statistics database.

**Results:** A total of 202 deaths/45,669 patients (0.44%) were identified (men 143 deaths/32,815 patients, female 59 deaths/12,854 patients). The odds ratio of biologic DMARD for death was 3.461(95% CI 2.111-5.674). The COD of 135 among 202 deaths were identifiable in ministry of statistics database. The identified most common COD was J code (pneumonia including aspiration pneumonia, chronic bronchitis, interstitial pneumonia etc): 34deaths, I code (ischemic heart disease, heart failure etc): 21 deaths, C code (11 cases of lung cancer, 5 cases of colon cancer, 3 cases of stomach cancer): 19 deaths and causes classified otherwise (senility, injury, and external causes etc)(Table1). A total of 58 deaths were identified in medication group 1,2,3. A number of deaths in each group was 12 deaths/1,721 patients in group1, 27 deaths/12,663 patients in group 2, and 19 deaths in 11,749 patients. A significantly lower on biologic DMARD was identified by Pearson's chi square test (p=0.01).

**Conclusions:** Patients on biologic agent are at lower risk of death in AS. The leading COD in AS is different from that of general population, even different from the result of western countries. COD in patients with biologic DMARD is similar with total AS death.

Table 1 Causes of death in ankylosing spondylitis in Korea

year	KCD code	COD	COD code	COD	Frequency	Percent
2017	M45	J	J18	Pneumonia and influenza	19	9.41
2017	M45	C	C34	Lung ca	11	5.45
2017	M45 others		T66-T78	Unspecified effects of external causes	10	4.95
2017	M45	I	I21	Ischaemic heart diseases	9	4.46
2017	M45	J	J69	Aspiration pneumonia	9	4.46
2017	M45 others		A30-A49	Other bacterial diseases	7	3.47
2017	M45 others		S00-S09	Injuries to the head	7	3.47
2017	M45	I	I63	Cerebral infarct	6	2.97
2017	M45	C	C18	Colon ca	5	2.48
2017	M45	M	M45		5	2.48
2017	M45 others		R99	DOA, brain death	5	2.48
2017	M45	C	C25	Pancreas ca	4	1.98
2017	M45 others		N18	Renal failure, CKD	4	1.98
2017	M45 others		R54	Senility	4	1.98
2017	M45	C	C16	Stomach ca	3	1.49
2017	M45	I	I46	Cardiac arrest	3	1.49
2017	M45	I	I50	Heart failure	3	1.49
2017	M45	J	J44	COPD	3	1.49
2017	M45	J	J84	ILD	3	1.49
2017	M45 others		G30	Alzheimer	3	1.49
2017	M45 others		K70	LC, alcoholic	3	1.49
2017	M45 others		K74	LC	3	1.49
2017	M45 others		N17	Renal failure, ARF	3	1.49
2017	M45 others		N39	UTI	3	1.49
					135	