



PT1.01.02: Cause-Specific Excess Late Mortality in Lung Cancer Survivors Beyond Five Years Compared with the Cancer-Free Population: A Matched Cohort Study

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INTRODUCTION

Clinical importance

- With advances in screening, early detection, and treatment, more lung cancer patients now survive beyond 5 years, making other causes of death increasingly relevant
- However, contemporary evidence on the magnitude of cause-specific excess mortality in long-term survivors compared with the cancer-free general population remains limited

Aim

- To evaluate excess all-cause and cause-specific mortality among 5-year lung cancer survivors relative to the matched general population and identify targets for improving long-term survival..

METHODS

Study design

- Nationwide population-based cohort study in South Korea

Participants

- Individuals newly diagnosed with lung cancer between January 1, 2005, and December 31, 2017, who survived >5 years after diagnosis.
- Cancer-free individuals from the general population were selected as a control group, matched at a 1:10 ratio on year of health check-up, age, and sex.

Study period

- All participants were followed from the index date (date of 5-year survival) until death or December 31, 2023

Evaluation

- Primary outcome:
Excess risk of all-cause and cause-specific mortality, estimated using adjusted hazard ratios (aHRs) and adjusted subdistribution hazard ratios (aSHRs) with 95% confidence intervals (CIs).

DISCUSSION AND CONCLUSION

Actionable Take Away Message

- Long-term survivors of lung cancer are at substantially higher risk of all-cause mortality compared with the cancer-free general population
- While lung cancer remained the predominant cause of excess mortality, other cause-specific risks emerged within particular survivor subgroups

Future Direction for Research

- Targeted and personalized screening strategies, along with interventions addressing modifiable factors related to the identified causes, would provide opportunities to further extend survival in this growing population.

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Artificial Intelligence (AI) Use Disclaimer

No artificial intelligence (AI) tools were used in the development or preparation of the presentation materials

RESULTS

Table 1. Demographic characteristics of the study population

Characteristics	Lung cancer survivors (n=20,321)	Matched cancer-free population (n=190,527)
Mean age at index date (SD)	67.1 (9.9)	66.8 (9.9)
Sex, n (%)		
Male	11,865 (58.4)	110,307 (57.9)
Female	8,456 (41.6)	80,220 (42.1)
BMI, mean (SD)	23.9 (3.2)	24.2 (3.2)
Smoking status		
Never-smoker	12,135 (59.7)	120,628 (63.3)
Ex-smoker	7,055 (34.7)	42,947 (22.5)
Current smoker	1,131 (5.6)	26,952 (14.1)
Pack-years smoked*, mean (SD)	28.7 (22.6)	21.4 (17.3)
≥20 pack-years smoked*, n (%)	5,306 (64.8)	35,238 (50.4)
Income in quintiles, n (%)		
1 st quintile (highest)	7,406 (36.4)	59,276 (31.1)
2 nd quintile	4,123 (20.3)	38,030 (20.0)
3 rd quintile	2,833 (13.9)	28,916 (15.2)
4 th quintile	2,170 (10.7)	25,755 (13.5)
5 th quintile (lowest)	3,789 (18.6)	38,550 (20.2)
Alcohol consumption, n (%)		
< 1 times/week	15,833 (77.9)	127,766 (67.1)
1-2 times/week	2,801 (13.8)	38,971 (20.5)
3-4 times/week	995 (4.9)	14,321 (7.5)
>5 times/week	692 (3.4)	9,469 (5.0)
Physical activity, n (%)		
Active	7,106 (35.0)	61,797 (32.4)
Inactive	13,215 (65.0)	128,730 (67.6)
CCI		
0	4,276 (21.0)	56,841 (29.8)
1-2	9,171 (45.1)	82,479 (43.3)
3-4	4,616 (22.7)	35,258 (18.5)
≥5	2,258 (11.1)	15,949 (8.4)
Treatment for lung cancer, n (%)		
Surgery	16,432 (80.9)	—
Radiotherapy	2,021 (9.9)	—
Systemic therapy	4 (0.0)	—
Follow-up duration since index date, years, mean (SD)	5.1 (3.2)	5.5 (3.3)

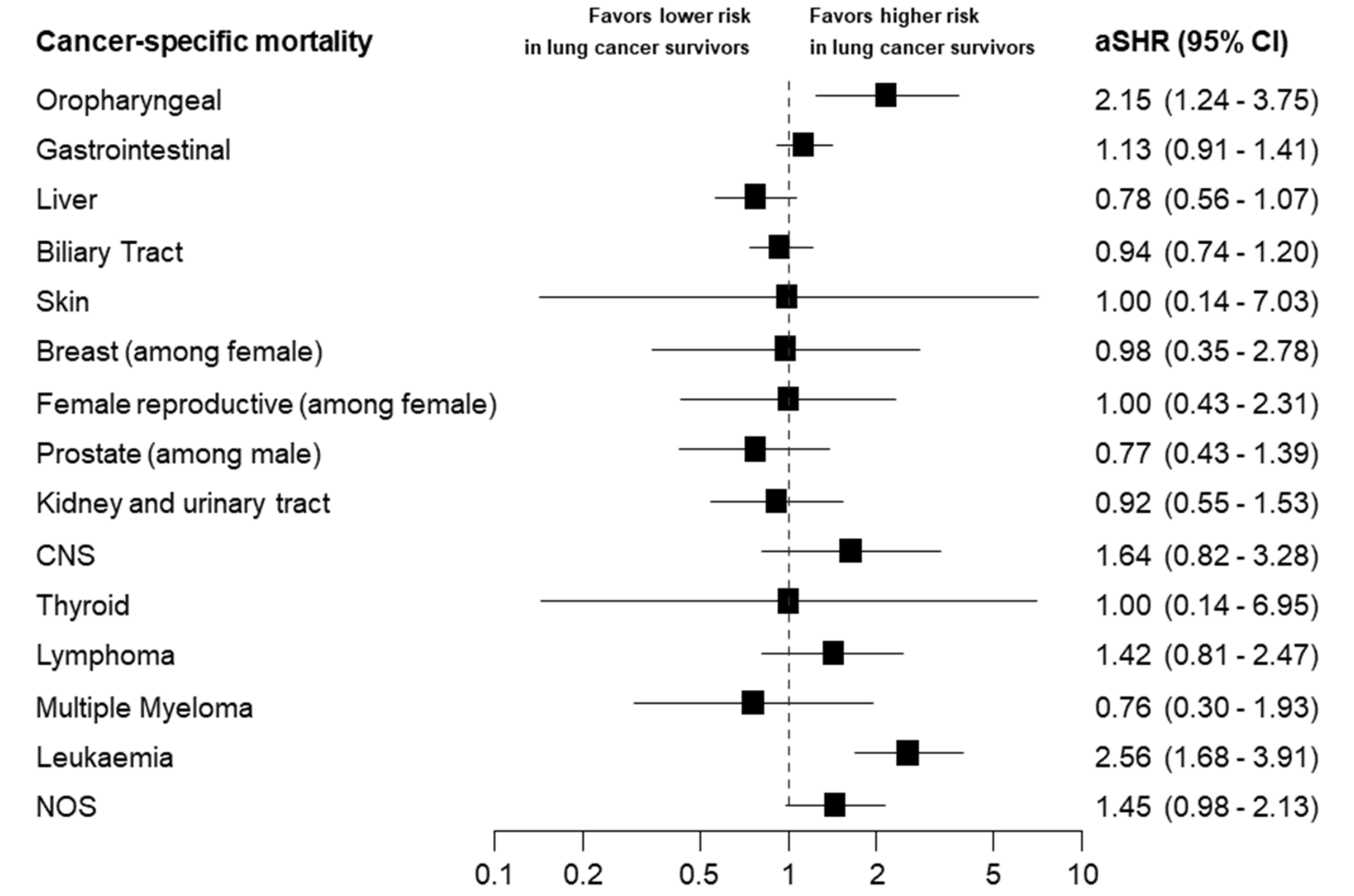
Table 2. Risk of all-cause and cause-specific mortality of 5-year survivors of lung cancer compared with matched cancer-free population

Mortality outcomes	Person-years	Number of events	Events per 10,000 person-years	Unadjusted (S)HR (95% CI)	Multivariable adjusted ^a (S)HR (95% CI)
All-cause mortality					
Matched general population	1043869.5	14,635	140.2	Reference	Reference
Lung cancer survivors	103211.0	3,433	332.6	2.44 (2.35 – 2.53)	2.42 (2.33 – 2.51)
Caused by lung cancer^b					
Matched general population	1043869.5	126	1.2	Reference	Reference
Lung cancer survivors	103211.0	1,534	148.6	121.00 (101.00 – 145.00)	115.70 (96.54 – 138.68)
Caused by other site cancer^b					
Matched general population	1043869.5	3,075	29.5	Reference	Reference
Lung cancer survivors	103211.0	363	35.2	1.12 (1.00 – 1.25)	1.10 (0.99 – 1.24)
Cardiovascular cause^b					
Matched general population	1043869.5	3,148	30.2	Reference	Reference
Lung cancer survivors	103211.0	358	34.7	1.08 (0.96 – 1.20)	1.00 (0.89 – 1.12)
Pulmonary cause^b					
Matched general population	1043869.5	2,255	21.6	Reference	Reference
Lung cancer survivors	103211.0	470	45.5	1.99 (1.80 – 2.20)	1.69 (1.52 – 1.88)
COVID-19^b					
Matched general population	1043869.5	369	3.5	Reference	Reference
Lung cancer survivors	103211.0	58	5.3	1.49 (1.13 – 1.97)	1.30 (0.98 – 1.73)
Neuropsychiatric cause^b					
Matched general population	1043869.5	792	7.6	Reference	Reference
Lung cancer survivors	103211.0	84	8.1	1.00 (0.80 – 1.26)	0.91 (0.72 – 1.14)
External cause^b					
Matched general population	1043869.5	1,221	11.7	Reference	Reference
Lung cancer survivors	103211.0	121	11.7	0.94 (0.78 – 1.13)	0.89 (0.73 – 1.07)

^aAdjusted for age, sex, body mass index (BMI), smoking status, smoking pack-year (PY), income, alcohol consumption, and Charlson Comorbidity Index

^bSubdistribution hazard ratios are presented

Figure 1. Forest plot of adjusted subdistribution hazard ratios for cancer type-specific mortality in 5-year survivors of lung cancer compared with matched cancer-free population



^aAdjusted for age, sex, body mass index (BMI), smoking status, smoking pack-year (PY), income, alcohol consumption, and Charlson Comorbidity Index

Figure 3. Forest plots of adjusted subdistribution hazard ratios for cause-specific mortality stratified by age and smoking history

