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P3.019: Lung Cancer in Never Smokers: Short and Long-Term Outcomes After Curative-Intent Surgery in a Large Multi-Centre UK Cohort



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INTRODUCTION

- Lung cancer remains the leading cause of cancer mortality worldwide
- 20% of all patients with non-small cell lung cancer (NSCLC) are never smokers
- Lung cancer in never smokers (LCINS) is increasingly recognised as a distinct disease entity with unique epidemiological and aetiological characteristics
- As smoking prevalence declines, the proportion of patients with LCINS increases
- This study aimed to compare the peri-operative and long-term outcomes following curative intent lung resection for NSCLC in never smokers vs ever smokers

METHODS

- Retrospective multicentre cohort study
- Data from four UK thoracic surgery centres:
 - Manchester University NHS Foundation Trust
 - Liverpool Heart and Chest Hospital
 - University Hospitals of North Midlands
 - Blackpool Teaching Hospitals NHS Trust
- All consecutive patients undergoing curative-intent lung resection for primary NSCLC between January 2012 and December 2018 were included
- <100 cigarettes in a lifetime was used to define never smokers
- Primary outcomes were 90-day mortality & overall survival
- Secondary outcomes were complications & PLOS
- Univariable analysis of variables performed
- Multivariable Cox proportional hazards regression analysis was undertaken to identify variables independently associated with reduced overall survival
- Standard statistical checks for collinearity and proportional hazards assumptions were performed
- A survival curve was produced using the Kaplan-Meier method
- No patients were lost to follow-up

DISCUSSION AND CONCLUSION

- Following curative-intent resection for NSCLC, never smokers have fewer post-operative complications and substantially better long-term survival than ever smokers, despite similar peri-operative mortality.**
- Never smokers accounted for 1/7 patients undergoing resection for NSCLC and their proportion has increased over time
- Smoking status remains an independent predictor of survival after lung cancer surgery (HR 1.22, 95% CI 1.11-1.34)

Future Direction for Research

- These findings support growing evidence that LCINS represents a distinct clinical entity and should be considered separately in prognostic assessment and treatment planning
- Future research could inform the development of prediction models tailored to individual smoking status

REFERENCES & ACKNOWLEDGEMENTS

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Primary Researcher Marcus Taylor, under the supervision of Professor Philip A J Crosbie

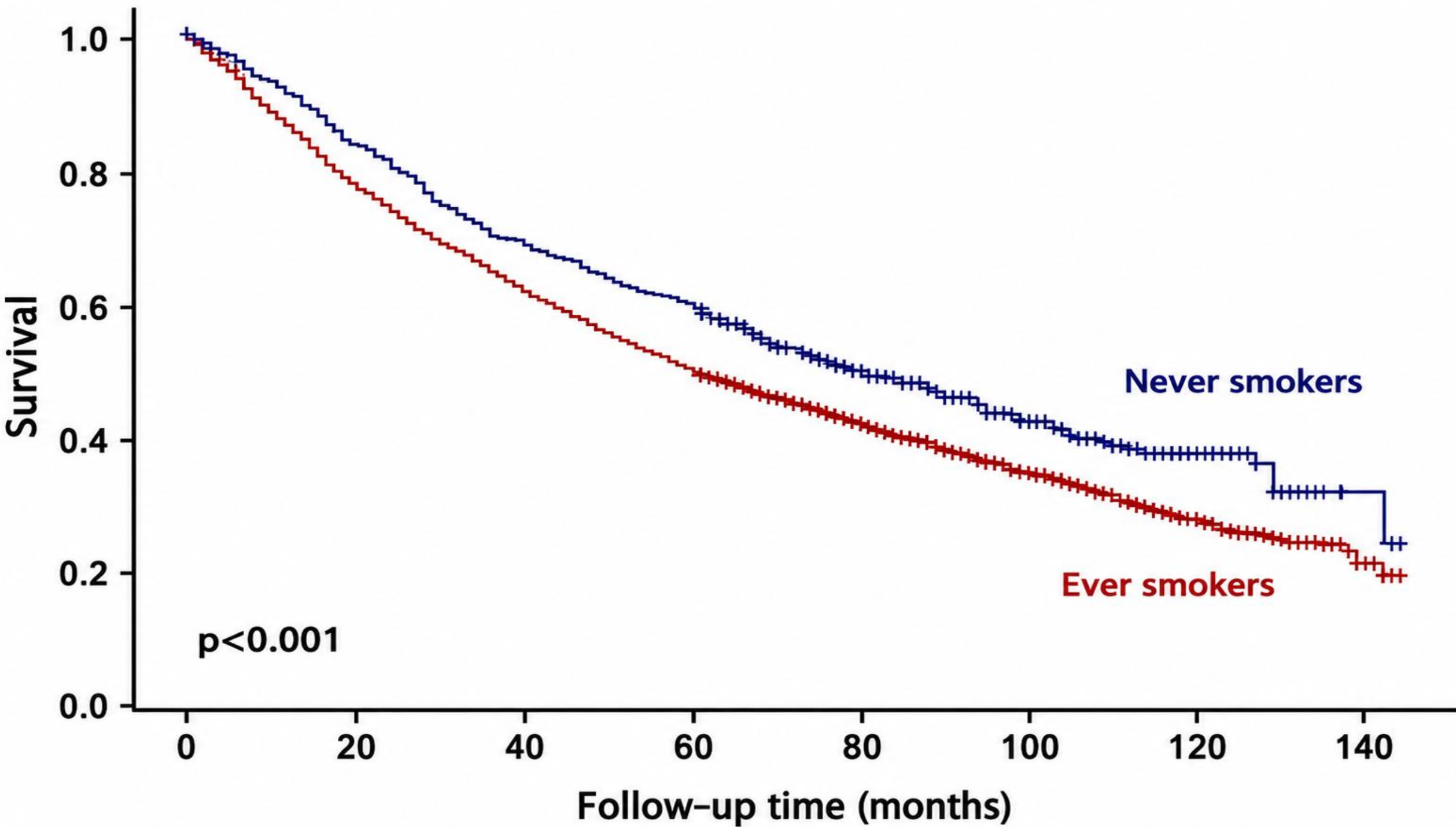
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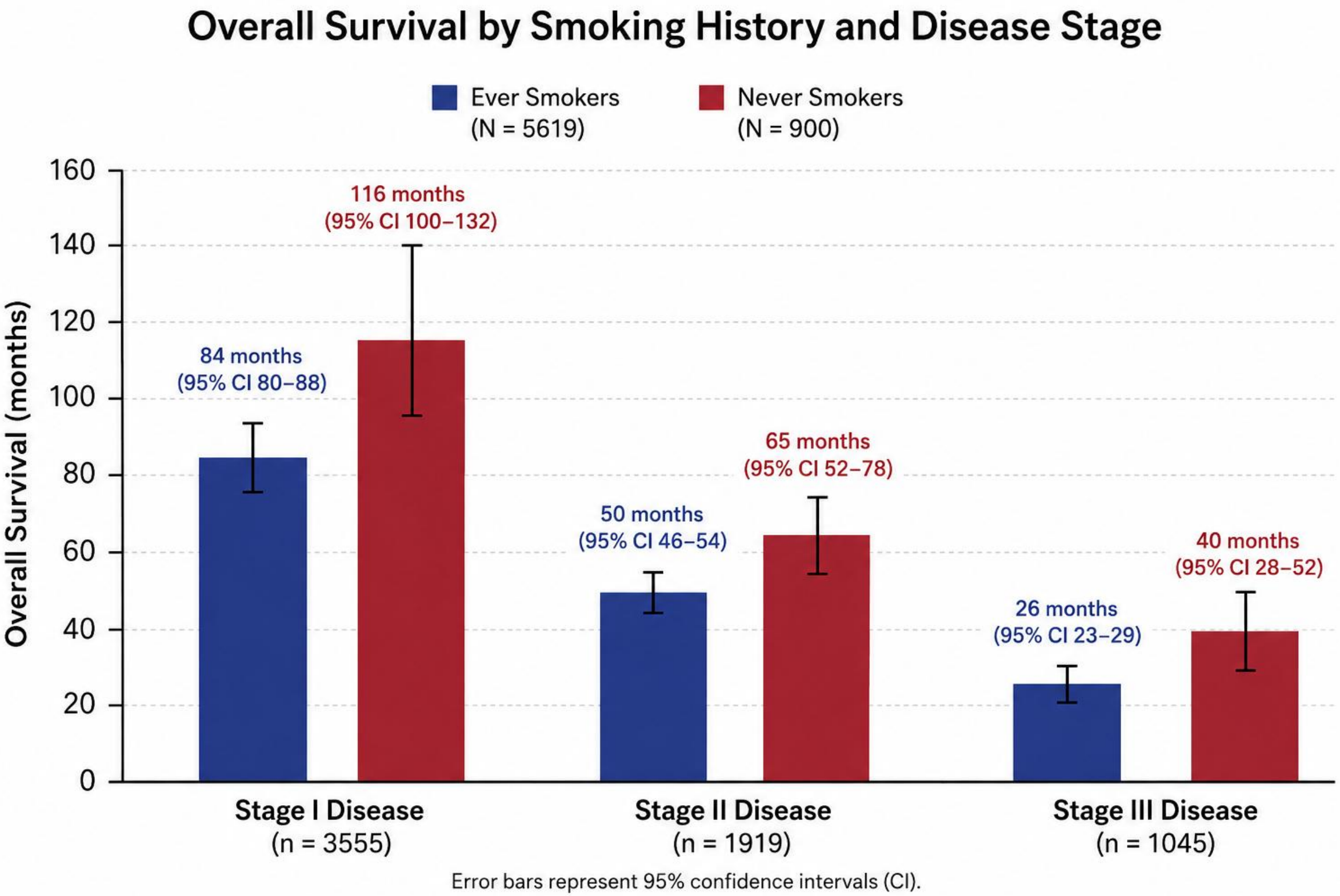
Artificial Intelligence (AI) Use Disclaimer

In accordance with the standards and guidance set forth by the Accreditation Council for Continuing Medical Education (ACCME), no Artificial Intelligence (AI) was used in the development and execution of this study, and no AI has been used in the creation or development of this academic poster.

RESULTS



Never smokers achieved significantly better long-term survival than current or former smokers following NSCLC resection ($p < 0.001$). Survival differences emerged early and were sustained throughout. This supports smoking as an important predictor of long-term outcomes.



Overall 90-day mortality rate was 3.8% (n=250). There was no significant difference in 90-day mortality between groups (ever smokers 4.0% [n=223] vs never smokers 3.0% [n=27], $p = 0.160$). Overall composite rate of complications was 13.2% (n=858). Incidence of each complication and hence the overall incidence of composite complications was significantly higher for ever smokers. PLOS was also significantly higher for ever smokers.

DEMOGRAPHIC VARIABLE	EVER SMOKERS (N=5619)	NEVER SMOKERS (N=900)	P VALUE
Age (years) (mean $\pm$ SD ^a)	69.1 ($\pm$ 8.6)	70.2 ($\pm$ 9.4)	<0.001
Predicted FEV1 ^e (%) (mean $\pm$ SD)	83.3 ($\pm$ 20.8)	92.5 ($\pm$ 22.3)	<0.001
Predicted DLCO (%) (mean $\pm$ SD)	69.5 ($\pm$ 16.1)	76.3 ($\pm$ 17.0)	<0.001
Ischaemic heart disease	15.3% (n=862)	10.2% (n=92)	<0.001
Segmentectomy	2.5% (n=140)	1.9% (n=17)	0.274
Complex lobectomy	6.0% (n=338)	4.0% (n=36)	0.016
Histology			
Adenocarcinoma	56.9% (n=3199)	70.0% (n=630)	<0.001
SCC	37.6% (n=2112)	23.2% (n=209)	<0.001
RESECT-90 score (%) (mean $\pm$ SD)	3.4% ($\pm$ 3.3%)	2.8% ($\pm$ 3.1%)	<0.001

Never smokers showed significant differences in age and lung function compared to ever smokers. Ever smokers were significantly more likely to have squamous cell carcinoma (SCC) and significantly less likely to have adenocarcinoma. Operative risk was significantly higher in ever smokers.

Never smokers achieved superior overall survival across all NSCLC stages. Median survival was 116 vs 84 months in stage I. Median survival was 65 vs 50 months in stage II. Median survival was 40 vs 26 months in stage III. Smoking history remains an important prognostic factor independent of pathological stage.

VARIABLE	EVER SMOKERS (N=5619)	NEVER SMOKERS (N=900)	P VALUE
90-day mortality	4.0% (n=223)	3.0% (n=27)	0.160
PLOS (days) (median $\pm$ IQR)	6 ($\pm$ 4-8)	5 ($\pm$ 4-8)	<0.001
LRTI	11.7% (n=655)	7.8% (n=70)	<0.001
Reintubation	3.0% (n=167)	1.8% (n=16)	0.044
Reoperation	2.0% (n=115)	1.0% (n=9)	0.033
Composite complications	13.8% (n=775)	9.2% (n=83)	<0.001