Treatment and Survival Outcomes for Indigenous and Non-Indigenous Australians Within the Victorian Lung Cancer Registry: A Retrospective Cross-Sectional Cohort Study

Melanie Wong, Mike Lloyd, Jessie Zeng, Sanuki Tissera, Kalinda E Griffiths, Justine Clark, Jonathan Gillies, Lisa Briggs, Jacqueline Lesage, Tom Wood, Craig Underhill, Sagun Parakh, Louis B Irving, Wasek Faisal, Rob Blum, Gary Richardson, Phillip Parente, Michelle Caldecott, Inger Olesen, Javier Torres, Evangeline Samuel, Christopher Lyne, Katharine See, David Langton, Thomas John, Gavin Wright, Matthew Conron, James Bartlett, Golsa Adabi, Maggie Moore, Susan Harden, Zoe K McQuilten, John R Zalcberg, Rob Stirling

Background

Confirmation of equity, disparity and unwarranted clinical variation in disease outcomes is a cornerstone of quality of care []. Inequitable outcomes are well recognised in cancer care and frequently associated with socio-economic, ethnic and geographic inequalities. The proportion of patients identifying as Indigenous Australian background is about 1.0% in Victoria, Australia. Registry studies have suggested Indigenous Australians have a much higher incidence of smoking-related cancers, with incidence levels increasing in remote areas, and are more likely to present with preventable cancers, diagnosed in late stage with poor prognosis. Observational studies of lung cancer in Indigenous Australians have suggested increased risk of suboptimal treatment, and lack of treatment, compared with non-Indigenous Australians. The risk of cancer death among Indigenous Australians is increased, as are competing death risks. Indigenous Australians have been observed to have a significant survival disadvantage compared with non-Indigenous Australians following a lung cancer diagnosis (median survival, 4.3 vs. 10.3 months). A qualitative study of lung cancer management suggests that barriers to optimal care may include healthcare preferences, language and communication, and sociodemographic factors. Reduced service access relates to complex interplays of cultural and spiritual values, remoteness, entrenched socio-economic inequality and racism, demanding a multifaceted solution design. We sought to examine lung cancer management and survival outcomes among Indigenous Australians in a contemporary population cohort using the Victorian Lung Cancer Registry (VLCR). We aimed to identify differences in patient demographics, patient and disease characteristics, management outcomes and survival between Indigenous and non-Indigenous Australian cohorts.

Methods

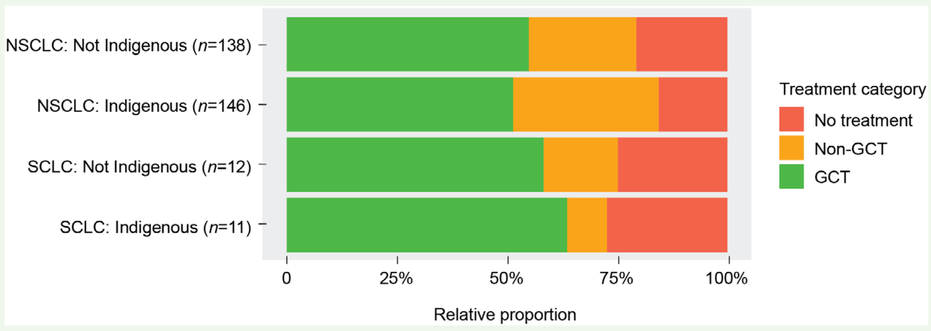
A retrospective observational cohort study of the VLCR using data collected from the VLCR between 18 January 2011 and 24 January 2024. All patients had primary lung cancer. The main outcome measures included patient, disease and management characteristics of Indigenous and non-Indigenous Australian patients. Impacts of patient and clinical variables on treatment and survival, measured by multivariable Cox regression and propensity-matched survival analysis.

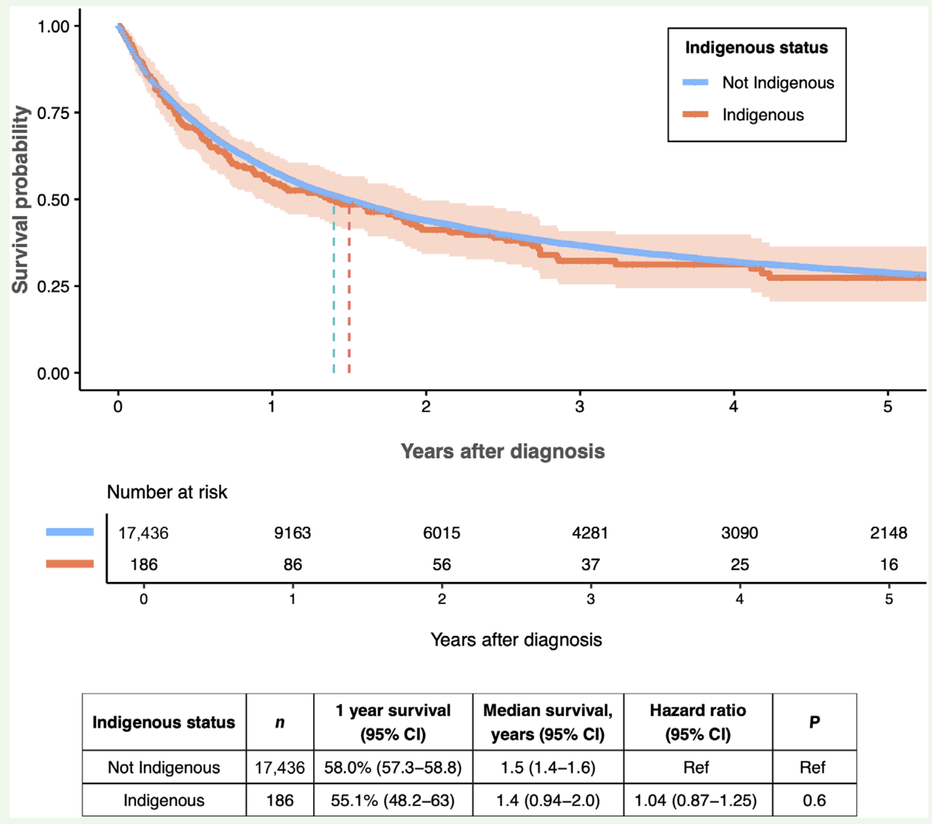
Results

We included 186 Indigenous and 17,439 non-Indigenous Australian patients. Indigenous Australian lung cancer patients were younger in age {median, 62 years (interquartile range [IQR], 55-69 years) vs. median, 71 years (IQR, 63-77 years); $p < 0.001$}, had lower socio-economic status (lowest quintile, 57 patients [31%] vs. 3274 patients [19%]; $p < 0.001$), were more likely to be current smokers (118 patients [65%] vs. 5963 patients [35%]; $p < 0.001$) and had higher levels of respiratory comorbidity (64 patients [34%] vs. 4088 patients [23%]; $p < 0.001$). There were no statistically significant differences in receipt of guideline-concordant treatment (82 patients [51%] vs. 8036 patients [56%]; $p = 0.12$) and survival outcomes (median survival, 1.4 vs. 1.5 years; hazard ratio, 1.06 [95% confidence interval, 0.88-1.27]).

TABLE 2 | Lung cancer management outcomes.

Characteristic	Number (%) of patients: Overall ($N=17,625$)	Non-Indigenous ($n=17,439$)	Indigenous ($n=186$)	p^*
Hospital type				<0.001
Public	14,721 (84%)	14,543 (83%)	178 (96%)	
Private	2904 (16%)	2896 (17%)	8 (4.3%)	
Hospital region				<0.001
Metropolitan	15,136 (86%)	14,999 (86%)	137 (74%)	
Regional	2489 (14%)	2440 (14%)	49 (26%)	
Diagnosis <28 days from referral[a]	11,011 (69%)	10,894 (69%)	117 (68%)	0.89
Treatment commenced <14 days from diagnosis[a]	5977 (39%)	5917 (39%)	60 (37%)	0.59
Treatment commenced <42 days from referral[a]	6589 (48%)	6517 (47%)	72 (48%)	0.84
MDM discussion	11,935 (68%)	11,803 (68%)	132 (71%)	0.34
Psychosocial supportive care screening	5264 (30%)	5213 (30%)	51 (27%)	0.5
GCT[a]	8118 (55%)	8036 (56%)	82 (51%)	0.12
Non-GCT[a]	3616 (25%)	3565 (25%)	51 (32%)	
No treatment[a]	2899 (20%)	2871 (20%)	28 (17%)	
Surgical resection	3752 (21%)	3719 (21%)	33 (18%)	0.24
SACT performed	9050 (51%)	8956 (51%)	94 (51%)	0.82
Radiotherapy performed	8027 (46%)	7923 (45%)	104 (56%)	0.004
EGFR test performed	5994 (34%)	5940 (34%)	54 (29%)	0.15
ALK test performed	5100 (29%)	5043 (29%)	57 (31%)	0.61
ROS1 test performed	1777 (10%)	1751 (10%)	26 (14%)	0.08
PD-L1 test performed	8035 (46%)	7947 (46%)	88 (47%)	0.64





Indigenous status	*n*	1 year survival (95% CI)	Median survival, years (95% CI)	Hazard ratio (95% CI)	*P*
Not Indigenous	17,436	58.0% (57.3–58.8)	1.5 (1.4–1.6)	Ref	Ref
Indigenous	186	55.1% (48.2–63)	1.4 (0.94–2.0)	1.04 (0.87–1.25)	0.6

Conclusion

We found lung cancer patients of Indigenous status were more likely to have demographic disadvantage and clinical risk factors that may contribute to discrepancies in management compared with patients of non-Indigenous status. Identifying barriers to healthcare and treatment in the Indigenous Australian population is an important research priority to improve disparities between the two populations.

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