Variation in surgical resection for lung cancer in relation to survival: population based study in England 2004-2006

NCIN Data Briefing

KEY MESSAGE:

Lung cancer resection rates in England are low and vary across the country. Increasing the resection rate would be expected to lead to an increase of overall lung cancer survival.

Introduction

Compared to other European countries England has a poor lung cancer survival and low rates of surgical resection for lung cancer. We explored the relationship between surgical resection rate and lung cancer survival.

Results

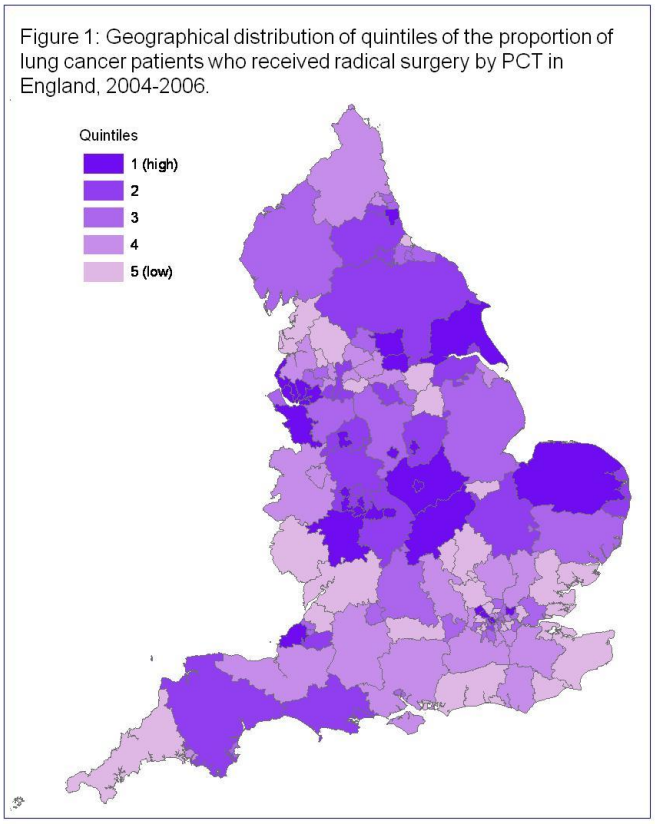
Table 1 shows the proportion of resected patients (%) among 77,349 lung cancer patients by quintile of surgical resection. In the highest resection quintile (1), 12% of patients received surgical resection and in the lowest resection quintile (5) this was 6%.

Table 1: Number and proportion of resected patients (%) among all NSCLC patients (77,349)

Resection quintile	Number of patients	Number of resected patients	Proportion of resected patients (%)
1 (high)	15,500	1,910	12.3
2	15,195	1,573	10.4
3	15,694	1,382	8.8
4	15,687	1,179	7.5
5 (low)	15,273	856	5.6

Figure 1 shows the map of PCTs in England with indication of the resection quintile in each area. The map indicates no obvious geographical pattern.

Figure 1: Geographical distribution of quintiles of the proportion of lung cancer patients who received radical surgery by PCT in England, 2004-2006.



Among non-small cell lung cancer (NSCLC) patient survival increased with increasing resection rate and this trend was not explained by differences in age, sex and socioeconomic deprivation (Figure 2).

Among resected patients there was an indication of decreased survival in the highest quintile (Figure 3).

The gradient between resection and survival is steep, and in absolute terms there are a large number of lung cancer deaths that could be postponed if more patients were resected. The ratio of 'deaths postponed' as a result of higher resection rates to those deaths caused by operating on more patients (presumably higher risk patients) however, is 40:1.

Figure 2: Mortality hazard ratio and 95% confidence interval (not visible due to narrow intervals) according to quintile of surgical resection among 77,349 NSCLC lung cancer patients: unadjusted (open boxes) and adjusted for age, sex and socioeconomic deprivation (filled boxes).

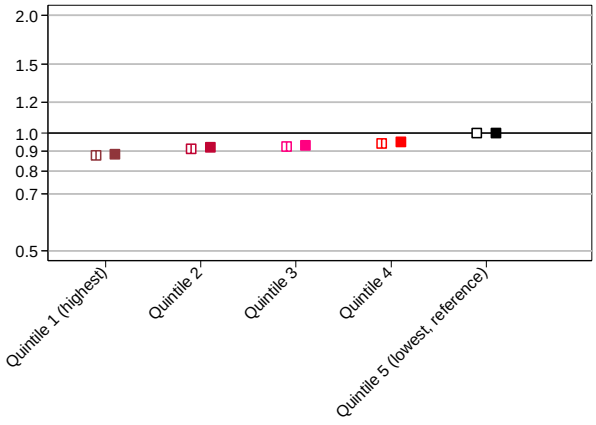
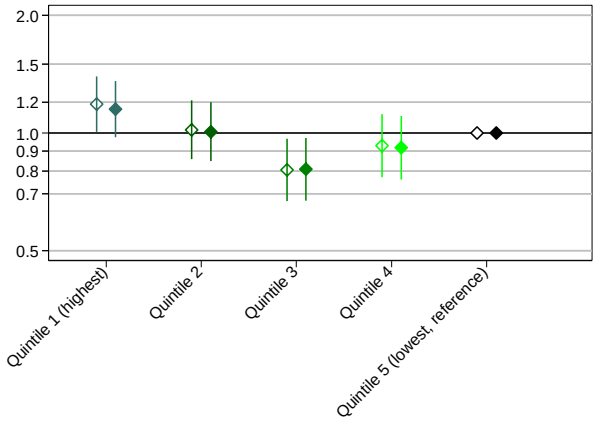


Figure 3: Mortality hazard ratio and 95% confidence interval according to quintile of surgical resection among 6,900 resected patients: unadjusted (open diamonds) and adjusted for age, sex and socioeconomic deprivation (filled diamonds).



Methods

We extracted data on 77,349 NSCLC patients diagnosed between 2004 and 2006 from the National Cancer Repository Dataset. We computed the proportion of lung cancer patients resident in each Primary Care Trust (PCT) who underwent surgical resection, and derived quintiles from the resulting distribution. Lung cancer patients were thereby assigned to a resection quintile, depending on their PCT of residence. We used Cox proportional hazards regression to assess the survival of 77,349 NSCLC patients and of the 6,900 resected patients in relation to resection quintile. In addition, we computed the excess deaths in each resection quintile among all lung cancer patients and the resected patients.

Conclusion

The contrast between the results among all patients and resected patients suggests that increasing the resection rate of lung cancer patients in England would probably result in improved survival. Carefully designed prospective research into the possible benefit of increasing resection rates is required to confirm this.

Acknowledgement

This work is taken from the following publication: *Variation in surgical resection for lung cancer in relation to survival: Population-based study in England 2004-2006.* Riaz SP, Lüchtenborg M, Jack RH, Coupland VH, Linklater KM, Peake MD, Møller H. Eur J Cancer 2012;48:54-60.

FIND OUT MORE:

Thames Cancer Registry

Thames Cancer Registry is the lead Cancer Registry for lung cancer and mesothelioma

http://www.tcr.org.uk

Other useful resources within the NCIN partnership:

Cancer Research UK CancerStats – Key facts and detailed statistics for health professionals

http://info.cancerresearchuk.org/cancerstats/

The National Cancer Intelligence Network is a UK-wide initiative, working to drive improvements in standards of cancer care and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research. Sitting within the National Cancer Research Institute (NCRI), the NCIN works closely with cancer services in England, Scotland, Wales and Northern Ireland. In England, the NCIN is part of the National Cancer Programme.