Stage at diagnosis only partly explains wide international variation in lung cancer survival

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Stage at diagnosis only partly explains the wide variation in lung cancer survival rates among different developed countries, indicates a large study of nearly 60,000 patients, published online in *Thorax*.

Other factors, such as treatment, are also likely to have a key role, say the authors.

Stage at diagnosis has often been suggested as one of the primary reasons why lung cancer survival is low in certain countries, such the UK, on the grounds that patients go to see their doctors too late for treatment to be effective.

The authors collected information on more than 57,000 adults diagnosed with primary lung cancer between 2004 and 2007 whose details had been entered in regional or national cancer registries in one of six countries.

These were Australia; Canada; Denmark; Norway; Sweden; and the UK. The authors then looked at data on how advanced the tumour was at diagnosis, with stage classified from early to late (I-IV) under the international TNM scheme.

They then monitored all the patients in order to estimate survival at one year and 18 months after diagnosis, for each diagnostic stage, for both non-small cell lung cancer and small cell lung cancer.

Non-small cell lung cancer accounts for 80% of all lung cancers. It grows more slowly and is generally more responsive to treatment. Small cell lung cancer tends to be more aggressive.

International comparisons of survival were adjusted to take account of differences in age and death from other causes.

Men made up between 52% (Sweden) and 62% (Australia) of the patients, and the average age at diagnosis was 70. The UK had the highest proportion of patients for whom data on stage were missing.

The analyses showed wide differences in overall survival one year after diagnosis. After taking account of age, this varied from 30% in the UK to 46% in Sweden. Survival was also high in Australia and Canada (42%) and intermediate in Denmark (34%) and Norway (39%).

One year survival for patients with small cell lung cancer was 12-16% lower in the UK than in Sweden and Australia, and intermediate elsewhere.

There were also international survival differences at each stage of diagnosis, but the UK had the lowest survival at each stage of disease for both types of lung cancer.

Sweden had the highest. Denmark had low survival for early stage disease, but average survival for more advanced disease. And Canada had comparatively high survival for early disease but not for more advanced disease.

Differences in the pattern of disease, delays in diagnosis or in the accuracy of investigations for each stage may account for some of the differences in survival, say the authors.

"Low stage-specific survival in the UK could conceivably arise in part because of suboptimal staging, and this misclassification of stage in a proportion of patients could lead to inappropriate treatment and therefore overall lower survival," they write.

But other factors, including differences in the quality of, and access to, treatment, are also likely to have a role, they say.

"This study demonstrates wide differences between six wealthy countries in short-term survival from lung cancer, the most common cause of cancer death worldwide," they write.

There are no obvious explanations for these variations, they write, and differences in diagnostic staging and treatment are likely to have a key role, they conclude.

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