

Thorax

Editorials

Management of lung cancer

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It is a universally held principle that in an equitable society all patients with a particular disease should be optimally treated for it, without regard to their age, to their place of residence, or to whom they initially present or are referred. This has recently been reaffirmed in the Policy Document produced by the Expert Advisory Group on Cancer to the Chief Medical Officers of England and Wales as one of the key principles which should govern cancer care.¹ However, two papers in this issue of *Thorax*^{2,3} complement evidence published elsewhere that the management of patients with lung cancer is often suboptimal. These data, which show a very wide variation in care patterns – even between specialist services – suggest that there is an urgent need for the development and use of auditable standards.

Variations involving the elderly

Because of the overwhelming impact of tobacco consumption on a person's subsequent risk of developing lung cancer, past and present patterns of tobacco consumptions can both explain present age specific patterns of presentation and be used to predict future changes. In parts of the world where tobacco smoking was well established in the early years of the century, and where overall consumption now is beginning to fall, the mean age at presentation is rising and will continue to do so for the next 20 years or so.⁴ This is shown, for example, in National Registry data from the UK where there has been an increase in the mean age at presentation from 65 to 68 years between 1975 and 1990. Predictions based upon Regional Registry data have suggested that, by the year 2000, it is likely that more than 40% of all patients with lung cancer in the UK will be aged over 75, and that an increasing proportion of these patients will be women.⁵

Against this background, it is a matter of great concern that there is increasing evidence that investigation and treatment rates for lung cancer are age related, despite evidence that the capacity to benefit from treatment is similar across the age bands.⁶ The key to the selection of appropriate treatment is accurate diagnosis, yet in a comprehensive regional survey the rate of histological confirmation for lung cancer patients increased from 61% to 82% in the period from 1976–8 to 1985–90 for patients under 60, but from only 19.4% to 39% for patients over 75.⁵ Similarly, active treatment by surgery, radiotherapy, or chemotherapy increased from 59% to 69% in patients under 60 over the same period, whereas for patients over 75 the increase was from only 29% to 41%. These histological confirmation rates compare very poorly with those for other

sites of cancer where it is not unusual to find rates over 90%. The Yorkshire Cancer Registry mean for all sites in 1990–2 was 81%, with the rate for lung being lowest at 64% compared with 79% for stomach cancer which also has a poor prognosis.

In the paper in this issue of *Thorax* by Brown *et al*² an analysis of the pattern of investigation and care of 563 patients with lung cancer who presented over a 30 month period to a single UK health district has reinforced this conclusion and has suggested that part of the explanation may be that fewer elderly patients present to, and are managed by, specialist physicians. They found that 43% of all lung cancer patients in their district were aged over 75, and that there were age related gradients for investigation (histological confirmation) and all treatments except radiotherapy. These differences could not simply be explained by performance status since, for those patients with an ECOG status of 0–1, 79% of patients under 65 had active treatment compared with only 39% of such patients over the age of 75. Whilst 85% of their patients overall saw a chest physician, only 78% over 75 did so. Most of the others (57%) saw a geriatrician. Patients cared for by chest physicians were more likely to have had a histological diagnosis (78% versus 48%) and to have had active treatment (49% versus 21%). Data from a different district in our region (table) show how management varied according to a consultant's annual new case load. The histological confirmation rate was much greater in the higher of the two case load bands than in the lower (73.6% versus 54.1%).

In the study by Brown *et al* a decision to treat actively was strongly related to whether or not a patient had a histological diagnosis, with only 5% of patients over 75 without such diagnosis receiving active treatment. It is still not clear, however, whether these low rates of histological confirmation and treatment are appropriate or not because there is strong evidence that prognosis is inversely proportional to age. The age gradient for prognosis in lung cancer was demonstrated by Rossing and Rossing⁸ and has been confirmed in two UK regional studies.^{6,9} In the paper by Watkin *et al*,⁹ for example, survival at six months from diagnosis in the 9771 patients who were histologically confirmed decreased from 50% in the 44 patients aged less than 40, to 40% for the 1570 patients aged 50–59, down to 20% of the 3870 patients aged more than 70 at presentation. Such differences are unlikely to be due to technical factors such as delayed registration although, paradoxically, there is some evidence to suggest that localised disease is more common as the age of presentation

increases.^{10 11} It is possible that this conclusion is incorrect and subject to a population bias in the studies. There is little evidence to support the contention sometimes made that lung cancer in the elderly usually follows a more “benign” and slowly progressive pattern of disease. Because of these uncertainties, there is now a very strong case for large population based studies to investigate further the factors which appear to determine these very substantial age related differences.

It has to be remembered that most elderly patients with lung cancer will die from, rather than simply with, their disease. Median survivals of only a few months have to be contrasted with life expectancies in the UK of seven years for a man aged 75 and six years for a man aged 80, and life expectancies for women of the same ages of 10 and seven years, respectively. Thus, far from being less aggressive in younger patients, lung cancer in the elderly may be more so, perhaps presenting at a later stage since there is such a strong general relationship between survival and stage at presentation.^{12 13}

International comparisons are difficult because of the problem of different denominators in the populations studied, but there is clear cut evidence from the United States that older patients receive less treatment.^{14 15} The need for a careful investigation of the appropriateness or otherwise of these age related differences is highlighted by the now strong evidence that, when correctly chosen for active treatment, elderly patients – both in terms of their survival after surgery and their long term prognosis – are not, in fact, separable from patients who are younger.^{5 6} Furthermore, because of the change in the mean age at presentation, there is now little justification for prospective trials of lung cancer therapy to be restricted to patients who, for example, are aged below 70 or 75 years, as has previously been the case. To do so limits the application of the results of such studies to only half the patients who are currently presenting with this disease in developed countries.

These data raise important questions about the nature of specialisation as it applies to cancer services. For these services, generally, it has been shown that better care is more likely to be given by specialists in a particular field, and that outcomes of all kinds are also better.^{16 17} This introduces three potentially contentious issues in the management of lung cancer. The first is that of the most relevant specialty for initial referral and assessment. Brown *et al* have demonstrated the case for this being the role of consultants in respiratory medicine. However, even within a specific cadre of organ specialists, whether in surgery or medicine, the second issue then arises as to the appropriateness or otherwise of an *additional* special interest in oncology allied to the principal specialty. This theme is growing in importance¹⁸ and presents a range of challenges to established professional bodies, both in respect of training and organisation of services. The third issue is concerned with the development of “teams” involved in both diagnosis and subsequent decisions on management. This concept is more advanced in some fields such as breast cancer than for lung cancer, and is regarded by its advocates as an important way of optimising care.

Variations in patterns of care and deviations from accepted best practice

In the UK considerable attention has recently been directed to establishing agreed standards of care for the management of lung cancer and to assessing how the actual practice matches up to this.¹⁹ Improvements in prognosis, whilst limited, are likely to be dependent on the appropriate use of active treatments such as chemotherapy for small cell lung cancer and surgery in elderly patients.⁶ Securing a

better prognosis and quality of life for patients therefore requires uniformly high standards of investigation, assessment, and decisions about treatment options. How can such changes be brought about? The problems of bringing the results of research into consistent widespread practice have been well described.^{20 21} The use of guidelines in cancer services has shown distinct benefits in some studies^{22 23} but not in all.²⁴ There is also evidence for the value of treatment protocols.²⁵ Grimshaw and Russell, in their review of the effectiveness of clinical guidelines, concluded that they do improve clinical practice although the extent of the improvement varies considerably.²⁶ Haines and Jones²⁰ point out that worthwhile changes are more likely when more than one approach is adopted. Guidance for the management of lung cancer is now available within the UK – for example, the report of a Working Group of the Standing Medical Advisory Committee²⁷ and the report of a National Workshop organised in 1993 by the British Thoracic Society, the Royal College of Physicians, and the York Health Economics Consortium.²⁸ We are not aware of similar documents from other countries.

The variation in the patterns of management of other solid tumours in the UK has been graphically described as a “cancer lottery”, by which is meant that patients’ chances of receiving optimum or suboptimum management depends on their referral – itself a process which has been largely uninformed by any real understanding of the issues at stake.²⁹ A recent analysis of a comprehensive registry data set for a large district health authority in the UK clearly shows that this pertains to lung cancer management as well (table). There is no reason to believe that this is an isolated finding and the pattern it reveals almost certainly applies across the country.

This variation in management is also demonstrated by the results published in this issue of *Thorax* from a survey carried out by the South East of Scotland Lung Cancer Group (SESLCG).³ Fergusson and his colleagues prospectively studied 622 patients referred to hospital specialists, probably representing about 65% of the patients who presented with lung cancer in their region during the study period. They showed a substantial variation in investigation and treatment between institutions and considerable deviation from what are now established as standard management practices. For example, the number of investigations was strongly dependent upon the hospital of origin and the unexpectedly high use of sputum cytology (155 of 622, 25%) depended upon a particular local interest and expertise. Overall, preoperative thoracic computed tomographic scans were performed in only 36% of patients (47 of 130) and the rate varied between 10% and 91% depending upon the hospital concerned. In a study where only 38% of operated patients (50 of 130) were eventually designated N0, it is salutary to note that only 39 patients had mediastinal sampling preoperatively and only 32 had node sampling at thoracotomy. These figures may not, as the authors indicate, be substantially different from typical

Patterns of management of new cases of lung cancer 1990–2 in a large district health authority of the Yorkshire region of the UK

	<10 new cases per consultant per year	≥ 10 new cases per consultant per year
Number of consultants	85	6
Number of patients	509	679
Patients managed by general surgeons	58	0
Patients managed by geriatricians	153	0
Histologically confirmed	54.1%	73.6%
Treated by surgery	5.1%	12.4%
Treated by radiotherapy	19.8%	38.1%
Treated by chemotherapy	5.9%	9.7%

practice in the UK,¹⁹ but they are, nevertheless, very far from recommended practice.²⁷⁻³⁰

The situation with respect to radiotherapy treatment is more complicated. There is good evidence from recently published British Medical Research Council studies that treatment with one or two fractions produces equivalent palliation to regimens with higher fractionation.³¹⁻³² In the Scottish study, however, in which registration ended in 1992, 63% of 186 patients had palliative treatment with five or more fractions. A recent audit³³ has subsequently shown a much larger change in response to this evidence compared with a similar review of 1988.³⁴ It is often assumed that most patients known to have small cell lung cancer have chemotherapy, but in the Scottish survey only 61 of 126 patients were given chemotherapy and this surprisingly low figure is, in fact, consistent with data from another region.⁵ Only 24% of patients having chemotherapy were in any form of study although the SESLCG group has strong representation from teaching hospitals and regional cancer centres. On the other hand, several other features of the survey show a picture of rapid and high activity. For example, 87% of patients had a confirmed diagnosis within two weeks of referral to a physician and 68% of patients overall had definitive anticancer treatment. This figure is much higher than elsewhere in the country,⁵ although it may reflect the selection, in the SESLCG study, of patients being referred to specialists within that group.

International comparisons

It is difficult to know how these figures and practices compare with other countries. Variation in treatment with age has also been described in Canada,³⁵ and the existence of different patterns of treatment in different places has been described in France.³⁶ The low rates of histological confirmation in the UK are not found in the Netherlands.³⁷

In terms of survival there appear to be substantial international differences. The recent Eurocare study of five year survival recorded by European registries³⁸ shows, for example, a variation between 12% (Switzerland) and 6% (UK). However, these comparisons may well be misleading. Some of the results were from very small samples – for example, 299 in Spain – whereas the figures for England and Wales were based on 93 639 patients. Because the UK data are so strongly population based, the age distribution of patients in this survey and probably others is different. For example, the proportion of patients under 55 years and under 65 years, respectively, were 16% and 45% in the Swiss data and 9% and 35% for England and Wales, and intervention rates are highly likely to be age dependent. UK figures for one regional survey from 1988–90 showed an operative rate of 20% for patients under 60, 8% for patients aged 70–74, and only 3% for patients aged over 75.⁵ Thus, age differences may well be reflected in the overall five year survival of a given population although age standardised relative survival data are given in the Eurocare study.

Similar strictures probably apply to the apparently higher rate of resection in the USA. Whereas the annual national summary of resections for lung cancer carried out by all UK cardiothoracic surgeons shows a stable figure of 10%,³⁹ the resection rate reported in a national survey from the USA⁴⁰ is 28% but this is derived from the tumour registries only of hospitals with approved cancer programmes.

Conclusions

Four important conclusions emerge from these studies. Firstly, careful observation of the investigation and management of lung cancer within populations yields important

information which should stimulate us to ensure a higher and more uniform standard. We need to recognise that the present variability in investigation and management suggests that, at the very least, some patients are inadequately investigated and that many are not treated in accord with current knowledge. This situation is most marked in the older age groups. Whilst this state of affairs is neither unique to lung cancer within the field of oncology nor to cancer services, it does give serious cause for concern.

Secondly, there are ways in which such issues can be addressed. The preparation and publication of widely supported standards or goals for lung cancer management is overdue and needs to be considered urgently, both nationally and internationally. In the UK this matter is being considered actively by the British Thoracic Society and the Royal College of Physicians. The current government policy initiative for cancer services within the UK provides an unrivalled opportunity for such an approach, particularly if it can be done reasonably quickly.

Thirdly, there is an implication within the studies reported in this issue of *Thorax* that services for lung cancer need to be organised so that all patients are fully assessed by a specialist. This in turn raises questions about the training and professional development of physicians who take on this work. For other fields of cancer such people should have clear working relationships, ideally in defined teams, with key colleagues in diagnostic and treatment disciplines. Such working relationships need to be underpinned by agreed clinical protocols and by involvement in audit.

Finally, we need to cooperate internationally to put registry data on a surer footing, and to ensure that treatment and outcome information can be part of routinely collected data. Comparison within and between countries is an essential component of audit and health services research. Improved population information should act as a stimulus to further collaborative assessments as to whether particular patterns of care do, in fact, result in better overall survival of our patients.

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