Postoperative oncological referral patterns for adjuvant treatment of patients undergoing curative resections for non-small-cell lung cancer at a regional thoracic centre

Ramananda Krishnanand Pai, Sridhar Rathinam, Vishnu Sharma, Ehab Bishay, Richard S. Steyn, Pala Babu Rajesh, Maninder Kalkat

Department of Thoracic Surgery, Birmingham Heartlands Hospital, Bordesley Green East, Birmingham, B9 5SS, United Kingdom

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Abstract

Objective: The Heartlands hospital provides services for 13 hospitals in the Pan Birmingham, Three Counties and Arden Lung Cancer Networks. After surgery for lung cancer, patients may be referred for adjuvant chemotherapy. The referral patterns and follow-up of patients differ between the various trusts. This study examines the current referral patterns following surgery with a view to identify areas for improvement.

Methods: We performed a retrospective review of 115 patients who underwent curative resection between April 2006 and March 2007. We reviewed the patient’s progress following discharge from the surgeons at various defined points, including discussion at a multidisciplinary team (MDT) meeting following surgery, referral to oncologist, oncology treatment acceptance and adjuvant treatment completion.

Results: Of the 115 patients, four patients died after surgery. The demographics of the surviving 111 patients mirrored the national trends with the average age being 69 + 9.6 years. The predominant tumours were adenocarcinomas (44.1%) and squamous cell cancers (44.1%). A total of 82 patients were discussed in an MDT meeting and a further 16 patients were directly referred to the oncologists for consideration for chemotherapy. As many as 67 patients were referred for chemotherapy. Forty-eight patients were offered chemotherapy, 38 patients accepted and 25 of them completed the chemotherapy. Thirteen patients could not complete due to drug toxicity. Data collection for the study highlighted organisational problems with data collection and non-uniformity in the role of the lung cancer co-ordinators. The postoperative management of stage I lung cancer patients varied between the units.

Conclusions: This study highlights areas of improvement in the current patient pathway for postoperative patients following lung cancer surgery and stresses the importance of achieving a consensus with regard to the management of resectable lung cancer.

A method of data collection that is accurate, easily accessible and complete is recommended to help in future auditing of patient outcomes and help in improvement of services.

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Keywords: Lung cancer; Chemotherapy; Postoperative; Referral

1. Introduction

Lung cancer is the most common cancer in the world and is the second most common cancer in the UK, with 38 598 people diagnosed in 2005 [1]. Survival rates for lung cancer in the United Kingdom are poor. While the 1-year survival rates in England and Wales have risen from 15% to 25% for men and from 13% to 26% for women diagnosed between 1971—1975 and 2000—2001, there has been little improvement in 5-year survival rates over the same period [2]. The Intergroup trials have demonstrated a survival advantage in patients after curative surgery and adjuvant chemotherapy [3].

The regional thoracic surgery unit, at the Birmingham Heartlands Hospital, Birmingham, provides services for 10 district general hospitals and three teaching hospitals. Following curative surgery for lung cancer, the patients may be referred for adjuvant oncological therapy. This process and the progress of patients differ between the various centres. This study examines the current referral patterns following surgery with a view to identify areas for improvement.

2. Methods

A retrospective review was undertaken of patients undergoing curative intent anatomical resection for non-small-cell...
lung cancer (NSCLC) in our institution between 1 April 2006 and 31 March 2007. The patients were identified from the surgical database; histopathology reports were reviewed. The post-operative process following discharge was reviewed at set points, including discussion at a multidisciplinary team (MDT) meeting, referral to oncologist, oncology consultation offered, oncology treatment acceptance and completion of adjuvant treatment. In the first instance, a proforma was sent to the lung cancer co-ordinators of each of the 13 participating hospitals for collation of data. If the proforma was incomplete, then a review of the case notes, electronic records and databases in the respective units was undertaken.

3. Results

There were 111 patients who were discharged following curative lung resection for lung cancer. These included 89 lobectomies and 22 pneumonectomies. The demographics of these patients mirrored the national trends for NSCLC with the average age of 69 + 9.6 years and male:female ratio of 1.5:1. Adenocarcinomas (44.1%) and squamous cancers (44.1%) accounted for a majority of the patients operated (Table 1). More than half of the patients were stage I with 21.6% in stage IA and 30.6% were stage IB (Table 1).

3.1. Discussion in the MDT and referral to oncologist

A total of 82 patients (73.9%) were re-evaluated in an MDT meeting following surgery to plan further management. Sixteen patients (14.4%) were directly referred by surgeons to the oncologist. After discussion in the MDT, 51 patients were referred to the oncology services. In 12 patients with stage IA and in eight patients with stage IB, adjuvant therapy was considered not to have significant prognostic benefit and hence, were not referred to oncologists. The poor performance status of eight patients precluded further chemotherapy. Two patients decided against any more treatment. Two patients died while awaiting oncology opinion (one each from brain metastasis and myocardial infarction).

3.2. Oncology treatment offered

Of the 67 patients referred for adjuvant oncology treatment, 48 patients were offered chemotherapy. In 11 patients with stage IB and two with IA, prognostic benefit was thought to be doubtful and six had suboptimal performance status and were not considered for chemotherapy.

3.3. Oncology treatment

As many as 10 patients declined treatment with chemotherapy. A total of 38 patients (34.2%) were commenced on chemotherapy, but only 25 (22.5%) completed the course. The treatment included various platinum-based chemotherapeutic regimens. In six patients, the treatment was stopped because of chemotherapy-induced complications and four patients discontinued due to poor tolerance to chemotherapeutic agents. Three patients died during the treatment. The details are summarised in Fig. 1.

3.4. Data collection

The role and responsibilities of the lung cancer co-ordinators varied between the hospitals. Only three of the participating units collected data on the progress of the patient in an electronic format in the MDT. There was a wide variation in data capture, necessitating an additional review of case notes/electronic records and databases in 12 cases in two hospitals. The data we collected for this study were similar to that collected by the National Lung Cancer Audit (LUCADA). While entering data into LUCADA is not mandatory, most hospitals in the region, except one, regularly contributed to it.

4. Discussion

Survival following treatment for lung cancer is stage related and patients with early-stage disease have the best
chance for long-term cancer-free survival following lung resection. Survival rates for lung cancer in the United Kingdom have traditionally been poor. We believe this is due to a combination of factors and may actually be improving. The UK patients have been older with more symptoms, poorer performance status at presentation, more co-morbidities, more likely to have smoked and have higher occupational risks. This may have led to the lower surgical resection rates in England, which was the strongest multivariate predictor of survival [4]. There may be other unknown factors related to lifestyle differences such as diet, population genetics or cancer biology which may be important and warrant further exploration [5].

However, these reports are based on retrospective registry data and this may be a confounding factor. There is evidence of improved survival [6] and an improvement in UK resection rates from selected centres in UK [7,8]. This may be the case across the nation due to appointment of more thoracic surgeons, expansion of thoracic surgery and MDT approach [9]. The 5-year survival for patients diagnosed between 1993 and 1995 and followed up to 2000, was only 5.5% compared with the 13% 5-year survival reported in the United States and similar figures from Europe (Ries LAG, Harkins D, Krapcho M, Mariotto A, Miller BA, Feuer EJ, Clegg L, Eisner MP, Horner MJ, Howlader N, Hayat M, Hankey BF, Edwards BK. SEER Cancer Statistics Review, 1975–2003, National Cancer Institute, Bethesda, MD. http://seer.cancer.gov/csr/1975-2003/, based on November 2005 SEER data submission, posted to the SEER Web site, 2006. Accessed on 23 May 2009.) [10]. However, improved 5-year survival has been reported for lung cancer patients diagnosed during 2001–2006. The figure was 6.9% in men, which was 0.4 percentage points higher than for men diagnosed during 2000–2004. In women, 5-year survival from lung cancer was 8.7%, which was 0.5 percentage points higher than the earlier period (Office for National Statistics. Survival rates in England, patients diagnosed 2000–2004 followed up to 2005. Available at http://www.statistics.gov.uk/CCI/nugget.asp?ID=86. 23 May 2009). Surgical resection rates are lower in the United Kingdom (11%) than those in the rest of Europe (17%) and North America (21%). There exists a wide variation in lung cancer survival among different regions of the United Kingdom (SIGN, Scottish Intercollegiate Guidelines Network. Management of patients with lung cancer; 2005. Available at http://www.sign.ac.uk/pdf/sign80.pdf. 23 May 2009) [11].


Currently in the United Kingdom, the lung cancer MDTs comprise of a thoracic surgeon, a respiratory physician, a radiologist, oncologists, lung cancer nurse specialist and the palliative care team. There is a lead clinician and an administrative co-ordinator for each MDT and the core members (e.g., physician, surgeon, oncologist and radiologist) have to be present in more than 75% of MDTs. Implementing the MDT process in the cancer care pathway as a standard practice has had a significant and positive impact on patient care with decrease in the referral to surgery times and improvement in resection rates [7,12]. Laroche et al. reported that the introduction of systematic MDT working at the Papworth Hospital between 1995 and 1996 resulted in improvement in resection rates from 10% to 29% in the first year [7]. The LUCADA report in 2007 has shown that 87% of patients had been discussed in the MDT at some point in the treatment pathway (National Lung Cancer Audit. Key findings about the quality of care for people with Lung Cancer in England and Wales incorporating headline and completeness data from Scotland. Report for the audit period 2007. http://www.ic.nhs.uk/webfiles/Services/NCASP/audits%20and%20reports/7089_Lung_Cancer_V5.pdf. 23 May 2009). In this study, all the patients were discussed in the MDT preoperatively and 74% patients were re-discussed in MDT following surgery. This raises an important question whether patients need to be re-discussed in an MDT after surgical resection.

We believe that the working of the MDT is constantly evolving so that patient care can be further improved; postoperative discussion in the MDT provides valuable information about the progress of the patient, thus maintaining continuity of care between the different specialties involved in the management of the patient. This is imperative, especially in a big cancer network such as ours where the management of patients by the various specialties involves the patient travelling to different hospitals, as all facilities are rarely found in one centre.

Discussion in the MDT after surgery also provides a feedback to the physicians and radiologists ascertaining the diagnostic accuracy of the investigative modalities used in the preoperative work-up of patients. It also helps in better understanding the role, appropriateness and indication of many evolving diagnostic modalities such as positron emission tomography (PET), endobronchial and endoscopic ultrasound (EBUS-EUS) in the work-up of patients with lung cancer. The presence of lung-cancer nurse specialists, who usually know the patient and relatives well, helps in individualising the treatment of patients rather than knit patients into groups based on pathological staging. There is, however, a risk of overcrowding the MDT with routine discussion of all postoperative patients. In our case, 82 patients were already discussed in an MDT. Discussing an additional 29 patients over 11 different MDTs over a 12-month...
period would have meant an additional MDT caseload of only 0.21 cases per MDT per month.

In this study, of the 67 eligible patients referred for adjuvant treatment postoperatively, only 25 completed this treatment. There was wide discrepancy in the postoperative management of these patients, specifically in the case of the stage I lung cancer cases. If one were to consider issues of survival and recurrence, it is reported that poor outcomes in patients with stage I disease is due to the high incidence of distant recurrences (15% in stage IA and 30% in stage IB) suggesting that even early-stage NSCLC may be a systemic disease at diagnosis and might benefit from the use of systemic therapy in conjunction with surgical resection [13,14]. Micrometastasis to distant organs has also been demonstrated in patients radiologically and pathologically staged as stage I lung cancer [14]. However, the National Institute of Clinical Excellence (NICE) guidelines suggest that adjuvant chemotherapy is not of benefit in patients with stage I lung cancer and this might reflect the reason for the poor accrual of stage I patients for post-surgical adjuvant therapy (National Institute of Clinical Excellence. Lung cancer: the diagnosis and treatment of lung cancer. London: Department of Health; 2001. http://www.nice.org.uk/nicemedia/pdf/cg024fullguideline.pdf. 23 May 2009). Current evidence from recent trials shows no advantage with adjuvant chemotherapy in stage IA disease. In stage IB disease, there may be some benefit in patients with tumour size more than 4 cm as shown in a subset analysis of the Cancer and Leukemia Group B (CALGB) 9633 trial, although this has not been proven conclusively [15]. While it is debatable whether administration of chemotherapy would improve the outcomes in this stage I disease, these issues should be discussed with the patients and the ultimate choice left to the joint decision by the oncologist and the individual patients. This is especially important in stage IB patients where the issue of postoperative adjuvant chemotherapy is still debated worldwide.

In patients undergoing chemotherapy, the proportion of patients who completed all the recommended cycles of chemotherapy was 65.7%, which is comparable to the data from many trials including 64% in the Big Lung Trial [16] and 69% in the ALPI Trial [17]. About 34.2% patients failed to complete chemotherapy cycles due to various reasons including toxicity, complications and death. The incidence of toxicity (7.8%) is comparable to other series but the incidence of mortality (7.8%) is more than in other studies [18].

The process of data collection highlighted a few process issues. Of the 13 participating trusts, only 10 centres collected real-time MDT discussion data and postoperative referral data in an electronically retrievable format. This is partly because of no clear allocation of responsibility for collection and managing the patient data. The huge workload on the existing lung cancer co-ordinators, who have to deal with an average of 126.9 new lung cancer patients per year may be another reason for the difficulties experienced in collection of data [19]. The National Lung Cancer Audit progress update published recently and based on the results from the data collected in 2007 has advised the use of the MDT to capture all lung cancer cases and record data in real time or near real time. It also recommends the need to identify key personnel to collect data and be responsible for the same. This will, in turn, help in establishing protocols for data collection, especially in situations where patients are treated across different organisations, as in the case of this study. Identifying key personnel who can be delegated the responsibly to collect required data will also help in better communication between trusts in this regard. Accurate collection of data will help in patient outcomes to be monitored, audited and improved upon.

5. Conclusions

This study highlights areas of improvement in the current patient pathway for postoperative patients following lung cancer surgery and stresses the importance of achieving a consensus with regard to the management of resectable lung cancer. It will be prudent to re-discuss postoperative patients in an MDT meeting to select patients for referral to oncology services. A method of data collection that is accurate, easily accessible and complete is recommended to help in future auditing of patient outcomes and help in improvement of services.

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References


