SPECIAL ARTICLE

Lung Cancer Articles in *Archivos de Bronconeumología*: 2 Years on From Lung Cancer Year of the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR)

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Lung cancer, or bronchogenic carcinoma, is the tumor with the highest incidence and mortality rates in Spain and worldwide.[1] Extremely rare at the turn of the 19th century, lung cancer was the most frequently diagnosed tumor in the closing decades of the 20 century. Accounting as it does for the largest annual number of tumor-related deaths in the world (around 900 000 deaths) and in Spain (around 18 000 deaths), lung cancer can be considered the tumor of the 20th century. Deaths related to this diagnosis have been recorded since 1951 in Spain.[2] By 1990 and largely due to the increase in smoking, cancer overtook cardiovascular diseases to become the main cause of death in the country.[3] Over the last 30 years, deaths from lung cancer have increased by 224% in men and by 331% in women. Among Spanish men, bronchogenic carcinoma is the main cause of death from cancer (23% of all tumor-related deaths),[4] followed at some distance by prostate and colon cancer.[5] As for Spanish women, deaths from lung cancer almost doubled between 1973 and 1997 (from 3.3 to 6.4/100 000 inhabitants), and the mortality rate has been rising by 1.5% annually since 1988. Among women, lung cancer is currently the sixth most frequent cause of cancer-related mortality. The great increase in the number of women smokers (27% of women in 1997 compared to 17% in 1978[6]) would predict a further rise in the incidence of bronchogenic carcinoma among women in the coming years.

The European Network of Cancer Registries (composed of Spanish and other European registries) compiles data on cancer prevalence and mortality in the European Union (EU). According to estimates for the EU in 1990, bronchogenic carcinoma was the most prevalent cancer in men in all EU countries without exception. Overall, Spain had 51.7 cases/100 000 inhabitants compared to 55.6 cases/100 000 inhabitants for the EU; however, although lung cancer was the third most prevalent tumor among women in the EU, in Spain it was only the twelfth most prevalent tumor[7,8] (10.3 cases/100 000 inhabitants in the EU compared to 3.4 cases/100 000 inhabitants in Spain).

Squamous cell carcinoma is the predominant histologic type in Spain, followed by adenocarcinoma and small cell tumors; in women, however, adenocarcinoma is the most prevalent lung cancer.[9,10] Although the Spanish distribution is different from that for other countries, Spain is similar in that the incidence of squamous cell lung tumors is falling and that of adenocarcinomas is rising.[11-13]

Reported mortality rates for lung cancer vary. The EU registry for 1990,[7] for example, recorded 46.2 cases/100 000 Spanish men, and 3.5 cases/100 000 Spanish women. The mortality rate for this tumor has increased significantly in recent decades, rising from 31.4 to 58.6 cases/100 000 inhabitants between 1973 and 1997, for example.[5] A trend toward increasing mortality rates among men is particularly evident[14]; in 1951 male mortality was 8.6 cases/100 000 inhabitants, but by 1990-1995, the annual rate was 47.7 cases/100 000 inhabitants. For women, however, the lung cancer mortality rate has remained fairly stable.

In recent years, great advances have been made in our understanding of the carcinogenesis of lung cancer (molecular biology), diagnostic and imaging techniques (latest generation computed tomography, positron emission tomography, etc), endoscopic techniques (endobronchial and endoscopic ultrasonography, etc), and new treatments (mainly protocols for neoadjuvant chemotherapy and radiotherapy). Nonetheless, little has improved in terms of prognosis, and both the rates of surgical treatment (around 15% to 20%) and survival (3 to 5 years) remain low.

Given this scenario, the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) designated the year 2005 as Lung Cancer Year. As with the years designated as chronic obstructive pulmonary disease, asthma, and pneumonia years (2002, 2003, and 2004, respectively), the 2 basic aims were to raise awareness among specialist and primary care doctors in regard to the serious public health problem posed by lung cancer, and—perhaps more importantly—to alert social and political entities to the importance of this disease from an epidemiological perspective.

Lung Cancer Year 2005 was a year of intense activity that had an important impact on medical and healthcare groups, social bodies, public authorities, the media, and

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society in general. The first public act in the highly successful campaign was held in early December 2004 in Barcelona, when the Lung Cancer Year Organizing Committee of SEPAR and the Spanish lung foundation (Fundación Respira)—jointly responsible for the initiative—presented pharmaceutical industrial representatives with their proposal for the campaign program for 2005.

The lynchpin of the campaign was a traveling Lung Cancer Year exhibition, seen to be an important medium for informing and educating the public on smoking and lung cancer. Visited by over 60 000 people from all over Spain in 2005, it proved very successful in raising cancer awareness among the general public, media, public authorities, and other groups.

The exhibition was housed in a marquee designed as a giant cigarette—a reminder of the fact that over 90% of lung cancer cases are attributable to smoking. A number of factors contributed to the success of the campaign year: World Cancer Day 2005 was dedicated to lung cancer, new Spanish anti-smoking legislation (restricting smoking in public places) was passed, and anti-smoking campaigns were launched in several regions of Spain.

Lung Cancer Year led to close cooperation between SEPAR and the Fundación Respira and other bodies, such as the Fundación Respira (Asociación Española Contra el Cáncer), the Spanish Ministry of Health and Consumer Affairs, and the health boards of a number of autonomous governments. Furthermore, closer ties were forged between scientific societies and a range of organizations and authorities, leading to cooperation between representatives of pulmonology societies in the regions and public health boards and authorities. Table 1 lists the activities implemented during Lung Cancer Year 2005, including the itinerary of the traveling exhibition and other initiatives.

The aim of this article is to assess the impact of Lung Cancer Year on SEPAR's journal by analyzing the number of articles associated with lung cancer published in *Archivos de Bronconeumología* in recent years.

For our analysis we used the search engine for *Archivos de Bronconeumología* on the SEPAR website. Using the advanced search option we searched for articles published between January 2001 and April 2007 containing the terms *cáncer de pulmón* (lung cancer) or *carcinoma broncogénico* (bronchogenic carcinoma) in the title or abstract. Although the initial number of articles retrieved was 114, this number was not considered definitive; some of these articles had no bearing on lung cancer (ie, they referred to other entities such as sarcoidosis, chronic pulmonary obstructive disease, Wegener disease, cystic lung diseases, etc), and other articles dealing with lung cancer had been excluded because they either mentioned a more specific type of lung cancer, or because other terms had been used, such as, for example, *metástasis pulmonar* (lung metastasis). Finally, an exhaustive review of all issues of *Archivos de Bronconeumología* published between January 2001 and April 2007 resulted in a definitive total of 100 articles.[15-114]Article distribution by year of publication is shown in Table 2. Noteworthy is the fact that 2005 was the year in which the greatest number of articles on lung cancer was published (n=21), most likely coinciding with the designation of 2005 as Lung Cancer Year. This increase was not continued into 2006, which had the lowest number of publications on lung cancer (n=11) of all the years in the period analyzed. Reversing this trend, however, the first 4 months of 2007 equalled the total for the whole of 2006.

The distribution of the articles by type of publication is shown in Table 3. Of particular interest is the fact that almost half the articles on lung cancer for this period were original articles (n=43). It can be deduced that there is significant research interest in lung cancer in Spain, manifested not only in studies performed by individual

TABLE 1
Lung Cancer Year 2005: Summary of Activities.

Winter meeting of the SEPAR* Oncology Assembly (Oviedo, January)
Lung cancer round table of the Caceres Association of Pulmonologists (Caceres, February)
Meeting of the SEPAR Nursing Assembly (Madrid, February)
Winter meeting of the SEPAR Clinical Assembly (Jaen, February)
Course on advances in lung cancer (Madrid, March)
Winter meeting of the Tobacco Addiction Assembly (Girona, March) + exhibition
Conference of the Asturian Respiratory Pathology Society (ASTURPAR) (Oviedo, March) + exhibition
Meeting of the SEPAR Techniques and Transplant Assembly (A Coruña, April) + exhibition
Annual conference of the Catalan Pulmonology Society (SOCAP) (Sant Cugat del Vallès, Barcelona, April) + exhibition
Neumomadrid conference (Madrid, April) + exhibition
Mesothelioma seminar (Oviedo, April)
Continuous professional development on lung cancer (Barcelona, May)
World No Tobacco Day. Exhibition in Madrid. Spirometry performed on ministers at the Spanish Congress of Deputies. Special communications campaign (May)
Traveling exhibition for World No Tobacco Day (Palma de Mallorca, May)
Joint activities with the antismoking campaign of the Department of Health of the Autonomous Government (Generalitat) of Catalonia. Traveling exhibition (Barcelona, May)
Conference of the Spanish Society of General Medicine (SEMG) and the "Roads to Health" exhibition (Gijón, June) + exhibition
National SEPAR Conference (Valencia, June) + exhibition
World Lung Cancer Conference (Barcelona, July) + exhibition
Meeting of pulmonologists at the Hospital Virgen del Rocío (Seville, September) + exhibition
European Cancer Week and communication at the Symposium on Lung Cancer (Tarragona, October) + exhibition
Lung cancer conference–debate + exhibition at the Andorra Fair (Andorra la Vella, October)
Traveling exhibition (Lleida, November)
Communication at the Meeting of the National Smoking Prevention Center (CNPT) (Salamanca, November)
Meeting on Noninvasive Mechanical Ventilation (Caceres, November) + exhibition
Traveling exhibition (Barcelona, December)

*SEPAR indicates Spanish Society of Pulmonology and Thoracic Surgery.

TABLE 2
Articles on Bronchogenic Carcinoma Published in *Archivos de Bronconeumología*, Grouped by Year. Search Performed in the SEPAR* Website Using *cáncer de pulmón* (*lung cancer*) or *carcinoma broncogénico* (*bronchogenic carcinoma*) as Search Terms

Year	Number
2001	14
2002	15
2003	17
2004	12
2005	21
2006	11
2007 (January-April)	10
Total	100

*SEPAR indicates Spanish Society of Pulmonology and Thoracic Surgery.

TABLE 3
Articles on Bronchogenic Carcinoma Published in *Archivos de Bronconeumología* Between January 2001 and March 2007, Grouped by Type

Type	Number						
	2001	2002	2003	2004	2005	2006	2007
Editorials	1	1	2	1	2	–	–
Original articles	6	5	7	5	10	8	2
Special articles	1	–	–	–	–	1	1
Guidelines	–	–	–	–	1	–	–
Review articles	1	2	–	–	–	–	–
Techniques and procedures	–	1	1	–	–	–	–
Case reports	2	3	1	3	6	1	3
Letters to the editor	3	3	6	3	2	1	4
Total	14	15	17	12	21	11	10

TABLE 4
Articles on Bronchogenic Carcinoma (Excluding Case Reports and Letters to the Editor) Published in *Archivos de Bronconeumología* Between January 2005 and March 2007, Grouped by Knowledge Area

Knowledge Area	Number			
	2005	2006	2007	Total
Epidemiology	3	4	–	7
Treatment	3	3	1	7
Diagnosis	2	1	–	3
Prognosis and survival	3	–	1	3
Healthcare costs	2	–	1	3
Other	13	9	3	25

hospitals, but also in multicenter studies such as the study by the Bronchogenic Carcinoma Cooperative Group of SEPAR (GCCB-S), and the Spanish epidemiological lung cancer study (EpicliCP-2003) involving 13 centers in 9 autonomous communities. This research interest became more evident in 2005 and 2006; 2005 was the year in which the largest number of original articles was published (n=12), whereas 2006 saw the largest percentage of original articles on lung cancer (over 80%)—this despite the fact that 2006 was the year in which the fewest articles on lung cancer were published.

Published during this period were 2 articles on techniques and procedures (video-assisted lobectomy through the auscultatory triangle,[84] and the usefulness of endoscopic ultrasound-guided fine needle aspiration in diagnosing the extension of non-small cell lung cancer[88]), 1 set of guidelines (evaluation of surgical risk in bronchogenic carcinoma[36]), 3 review articles (new therapeutic targets and strategies in lung cancer,[93] silica exposure and lung cancer,[100] and combined chemo- and radiotherapeutic treatment of locally advanced bronchopulmonary carcinoma[103]), and 3 special articles (proposed terms for endobronchial lesions in patients suspected of having a bronchial neoplasm,[24] the epidemiology of lung cancer in Spain and forecast for the future,[27] and a consensus report on intraoperative lymph node staging in bronchogenic carcinoma[102]).

The number of original articles on lung cancer published between January 2005 and April 2007 was high (n=20) in comparison with the number of original articles on asthma[115] (n = 7) or on pneumonia[116] (n=7) published in the aftermath of the designation of asthma year (2003) and pneumonia year (2004), although lower than the number of original articles on COPD[117] (n=32) published following the designation of COPD year (2002).

We also analyzed the knowledge areas covered by the publications since 2005 (excluding case reports and letters to the editor). The results are shown in Table 4. Most of the articles refer to epidemiology (n=7) and treatment (n=7), followed by prognostic (n = 4) and diagnostic factors (n = 3).

Of note among the epidemiology studies is the prospective multicenter study by Sánchez de Cos Escuín et al[30] (EpicliCP-2003), which provides important data on the lung cancer situation in 9 autonomous communities of Spain, specifically, rates of incidence (between 42.4 and 61.8/100 000 inhabitants for men and between 1.5 and 8.6/100 000 inhabitants for women), the increase in lung cancer in women in comparison with previous studies, the low level of surgical interventions (14.8%), and the high rate of stage IV cancers (41.1%). Also interesting is the Spanish GCCB-S study on surgically treated bronchioloalveolar carcinoma (3% of all non-small cell lung cancer in Spain),[31] and the differences between this carcinoma type and the remaining resected lung cancer types (higher frequency of stage pI, and higher 5-year survival rates at 65% compared to 53%).

Other epidemiology studies discuss data on Spain and its regions, such as the special article by Sánchez Hernández et al.[27] Authors have also looked at the evolution of lung cancer mortality in Andalusia over the last 25 years,[25] the characteristics of lung cancer in Asturias[38] (similar to those for other regions of Spain), and the characteristics of lung cancer diagnosed in a teaching hospital in Barcelona[43] (also similar to Spain as a whole—with lung cancer shown to be on the increase among women and with a growing number of adenocarcinomas). Also of epidemiological interest is the case–control study

by Galán Dávila et al[48] performed in the area of Alicante; unlike previous authors, Galán Dávila et al reported no differences in regard to the risk of developing lung cancer in a carefully selected subpopulation of shoe manufacturing workers.

As for the 7 studies on the treatment of lung cancer, of particular interest is one by Padilla et al[47] on surgery and mortality patterns for localized stages of bronchogenic carcinoma, for which the 5-year survival rate for surgically treated stage IA cancer was reported as 81.4%, with no differences found between patients who underwent systematic lymph node dissection and the remaining patients. Of the other studies on treatment, 2 were conducted by the Chest Surgery Group of the Hospital de Salamanca.[34,53] One of these studies[53] reported a discrepancy of 13% between the type of resection performed and the resection scheduled initially, and a greater number of pneumonectomies performed than anticipated, due to hilar node involvement; the other study[34] compared outcomes for sleeve lobectomy and pneumonectomy. Also worthy of comment is the article published by the GCCB-S on risk factors for lung cancer surgery,[20] reporting a high rate of postoperative complications (35.2%), 14.2% of which were major; surgery-related mortality of 6.8% at 30 days was attributed largely to these major complications. Finally, we should also mention an editorial by Freixenet and Rodríguez[45] that discussed some of the debates in progress with regard to the surgical treatment of lung cancer—for example, whether or not to perform systematic lymph node dissection at stage I, the usefulness of segmental resections compared to lobectomies for localized and peripheral lesions, the effectiveness of induction chemotherapy at stages II and III, the treatment of choice for stage III, etc.

In the last 2 years, 4 articles have been published on prognostic factors. The most recent study was conducted by Cañizares Carretero et al,[19] who analyzed the possible influence of surgical delay on lung cancer survival. Although time until surgery—defined as the period elapsing between referral for chest surgery and actual surgery—was 56 days and therefore longer than the 4 weeks recommended by the British Thoracic Society, it was concluded, on the basis of the multivariate analysis, that this was not a predictor of poorer prognosis. A further 2 studies were performed by the chest surgery department of the Hospital La Fe de Valencia. One of these studies concluded—in contrast with others—that the use of blood products for surgically treated lung cancer at stage pI had no prognostic value.[39] In the other study referring to prognostic factors for patients undergoing surgery for non-small cell lung cancer classified as T2N1M0,[41] the authors identified the type and size of tumor (classified as <3 cm, between 3.1 and 5 cm, and >5 cm) to be long-term prognostic factors, with better survival for squamous cell tumors and for smaller tumors. Finally, the study by Galbis Carvajal et al[46] demonstrated the prognostic value of the level of carcinoembryonic antigen in pleural lavage fluid from the chest cavities of patients with lung cancer.

In recent years, 3 articles have been published on lung cancer diagnosis and staging. Two of these studies—by the Fernández Villar et al group[32,40] based at the Hospital de Vigo—refer to bronchoscopic techniques. The conclusion of their study on the usefulness of bronchial aspiration in endoscopically visible lung cancer was that yield does not depend on whether the aspiration is performed before or after other endoscopic techniques such as brushing or forceps biopsy, although a significantly better diagnostic yield is obtained if results from maternal before and after the other procedures is combined.[32] The second study analyzed factors that predict obtaining a diagnostic sample via transbronchial needle aspiration of diseased mediastinal lymph nodes; it was concluded that yield is greater for larger tumors (>20 mm) and for diseased lymph nodes related to small cell lung carcinoma.[40] Martín de Nicolás et al,[49] the authors of the third study on lung cancer diagnosis and staging published in this journal, pointed out the importance of routine mediastinal staging in women with non-small cell lung cancer awaiting surgery; they reported positive findings for a significant percentage (40.7%) of women in their study, particularly for women with adenocarcinoma.

Another article worthy of mention is the study by Abal Arca et al,[28] as it addresses an issue of vital importance in health care, namely, the costs associated with in-hospital diagnosis of lung cancer. The mean cost for outpatient diagnosis of lung cancer was observed to be 62% lower than for inpatient diagnosis. According to these results, important savings would be made if unnecessary admissions for disgnostic purposes were avoided. Other conclusions of this study were that non-small cell carcinoma was more costly to diagnose than small cell carcinoma and that advanced stage carcinoma was likewise more costly than early stage carcinoma.

Among the articles referring to other topics, of note is the special article proposing terminology for endobronchial lesions in patients with suspected lung cancer.[24] Taking into account the degree of infiltration (grades I, II, or III) and the probability of carcinoma, this study establishes correlative terms to apply when reporting bronchoscopic observations. Another article of interest is the set of SEPAR guidelines for evaluating lung cancer surgery risk factors, drawn up on the basis of a consensus of experts.[20] Before establishing general recommendations, the article discusses the issues that affect the performance of lung resection to treat lung cancer, namely, patient-related factors (general and comorbidity issues, preoperative functional evaluation, pregnancy testing, etc) and surgery-related factors (anesthesia, type of surgery, postoperative care, etc).

Although there have been significant developments in certain aspects of lung cancer in recent years, these have not as yet been reflected in articles published in *Archivos de Bronconeumología*. Missing are articles that discuss the early diagnosis of lung cancer (particularly in the aftermath of the publications of the International Early Lung Cancer Action Program[118,119]) and studies on the molecular biology of lung cancer. Although many articles on these subjects have been published elsewhere in recent years (according to one review, approximately 1400 articles between 1960 and 2005[120]), only 1 such article of an

experimental nature was published in *Archivos de Bronconeumología* in the period January 2001 to April 2007.[29]

This review aims to provide a general overview of the impact of the designation of 2005 as Lung Cancer Year, rather than indicate the quality of the studies on lung cancer published in *Archivos de Bronconeumología*. The number of articles on lung cancer indeed increased significantly over the 30 months studied; moreover, the articles published include a high proportion of original articles that dealt with particularly important aspects of this highly prevalent disease with a poor prognosis. The designation of 2005 as Lung Cancer Year has been, in our opinion, a major factor in keeping the spirit of scientific research on lung cancer alive in Spain.

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