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Review Article

Lung Cancer in Spain. Current Epidemiology, Survival, and Treatment

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ABSTRACT

In 2005, 19 115 people died of lung cancer in Spain. In spite of the increase in absolute mortality rates since 1950, the adjusted rate for men has declined. The incidence among women is lower in Spain than in other countries but it has increased (with a ratio of 1 woman for every 8.5 men). More than 50% of the patients are over 70 years of age. While the proportion of adenocarcinomas relative to other histological types has increased worldwide, squamous cell carcinoma still predominates in Spain (ranging from 24%-50.5%). The number of patients treated by surgical resection has not increased (14.8% in Spain in 2003). Operative mortality is 6.8%. Between 25% and 50% of patients receive only palliative medication. Absolute overall survival in patients with lung cancer is under 10% in many countries. The 5-year survival rate among patients treated surgically has increased slightly, with stage IA rates ranging from 58.3% to 68.5% and stage IIIA from 28.3% to 35.8%..

El cáncer de pulmón en España. Epidemiología, supervivencia y tratamientos actuales

Palabras clave:
Cáncer de pulmón
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Tratamiento

RESUMEN

En 2005 fallecieron 19.115 personas por cáncer de pulmón en España. Pese al aumento de las cifras absolutas de mortalidad desde 1950, las tasas ajustadas en varones han disminuido. La incidencia en mujeres, inferior a la de otros países, ha aumentado (1 por cada 8,5 varones). Más del 50% de los pacientes tienen más de 70 años. La proporción de adenocarcinomas ha aumentado en el mundo, aunque en España la estirpe epidermoide es predominante (24-50,5%). Las resecciones quirúrgicas (un 14,8% en España, en 2003) no han aumentado. La mortalidad operatoria es del 6,8%. Un 25-50% de los pacientes recibe sólo medicación paliativa. La supervivencia absoluta global del cáncer de pulmón es menor del 10% en muchos países. Entre pacientes resecados, la supervivencia a los 5 años (estadio IA: 58,3-68,5%; estadio IIIA: 28,3-35,8%) ha aumentado ligeramente.

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Table 1
Lung Cancer Deaths in Spain. Evolution 1980-2005[a]

	1980	1985	1990	1995	2000	2005
Men	7597	10 085	12 662	14 931	15 477	16 645
Percent variation	–	+32.7	+25.5	+17.9	+3.6	+7.5
Women	1174	1264	1320	1579	1886	2470
Percent variation	–	+7.6	+4.4	+19.6	+19.4	+30.9
Total	8771	11 349	13 982	16 510	17 363	19 115
Percent variation	–	+29.4	+23.2	+18.0	+5.1	+10.0
Male-to-female ratio	6.5	7.9	9.6	9.4	8.2	6.7

Source: Instituto Nacional de Estadística.[1]
[a] Number of deaths and percent increase with respect to the total number of deaths in the year shown in the preceding column.

Table 2
Incidence of Lung Cancer in Several Spanish Regions

	Gross Rate				Standardized Rate[a]		
Region or Province	Study Period	Men	Women	Total	Men	Women	Total
La Coruña[4]	1995–1996	73.7	3.0	37.1	–	–	21.7
Vinaroz (Castellón)[5]	1993–2002	71.7	9.3	40.0	–	–	20.2
Asturias[6]	2001	96.3	7.6	50.2	42.5	4.6	22.4
Avila[7]	2002	89.9	15.9	53.1	39.8	14.9	
Orense[8]	2003	105.9	23.4	–	39.8	15.1	–
Torrelavega (Cantabria)[9]	2003	85.7	11.2	–	43.6	8.2	
Extremadura[9]	2003	107.3	4.5	61.2	60.8	2.8	29.7

[a] Rate standardized to the world standard population.

Introduction

Lung cancer still ranks as the leading cause of tumor-related death in the world and is one of the respiratory diseases with the highest mortality. In recent years, changes have been observed in certain basic epidemiological parameters, such as distribution by age, sex, and histological type. Other aspects, such as clinical presentation, treatment strategy, the risks of surgery, overall survival, and waiting times for treatment, have changed very little, although there are still marked differences between studies and authors, in large part attributable to differences in the study methods used. The aim of the present review was to summarize in numbers the abundant but scattered information available concerning the various epidemiological and clinical aspects of lung cancer today. These statistics have been elucidated with explanations about where the data were obtained and we have added brief comments or clarifications concerning certain procedures and methods that may help to explain the discrepancies between the results of different studies.

Epidemiology

Mortality in Spain

In 2005, 19 115 people (16 645 men and 2470 women) died of lung cancer in Spain.[1] Although there has been a transient increase in absolute mortality, the downward trend is evidenced by the decline in the percent increase from 29.4% in the 5-year period between 1980 and 1985 to 5.1% in the period between 1995 and 2000 (Table 1). The slight upturn (+10%) during the last 5-year period (2000-2005) must be viewed in the context of the sizeable and rapid increase in the Spanish population caused by massive immigration. Taking recent demographic trends into account (the rapid aging of the indigenous population and the increase in the overall population caused by the recent large scale incorporation of immigrants), it can be easily determined that the adjusted incidence rates—which correlate closely with mortality rates—have begun to decline, at least in men. This phenomenon is reflected in some of the recent studies carried out in Spain.[2,3] It appears, therefore, that the uninterrupted increase in the incidence of lung cancer that started in the middle of the last century has finally come to an end and that Spain has now, although with some delay, joined the group of Western countries (USA, Canada, United Kingdom, Sweden, etc) that some years ago were the first places where the incidence of lung cancer first stabilized and then started to decline.

Incidence

The results of various studies on the incidence of lung cancer in Spain have recently been reported. Most of these studies were regional or provincial in scope,[4-8] with the exception of the EpicliCP-2003 study,[9] which included hospitals in 9 regions in Spain. Some of the variations observed can be attributed to differences in the characteristics of the studies themselves, but the results also revealed discrepancies between the regions even when the same methods were used (Table 2). Studies like these confirm the increase in lung cancer among women, a trend that is already very pronounced in some areas.

Age and Sex

While incidence has always been lower among women since the start of the lung cancer epidemic, the worldwide trend in recent years has been towards convergence, and the current male-to-female ratio in the USA is close to 1.[10] A number of statistical analyses and interpretations of large databases of cases of lung cancer have recently been published. It is clear that, in the non-smoking population, the incidence of lung cancer is higher among women.[11-13] Moreover, recent findings also suggest that women may be somewhat more susceptible to the carcinogenic effect of tobacco,[14,15] although this remains a matter of debate.[16-21] In Spain, the ratio of males to females with lung cancer is still high, although less so than in the

Table 3
Lung Cancer: Age, Sex, and Comorbidity in Various Regions

Country or region	Type of Registry Scope	Age at Diagnosis, y					
		Study Period	Male-to-Female Ratio	Mean	Median	=70 years, %	Comorbidity, %[a]
USA[22]	PR (national)	1996–2000.	1.6[b]	–	–	–	–
Holland[23]	PR (national)	1995–1999	4.2	–	–	38.6	66.0
Nottingham (United Kingdom)[24]	HR (local)	1998–2001	1.7	–	71	55.0	–
Scotland[25]	PR (regional)	1995	1.5	–	70	52.5	–
Oulu (Finland)[26]	PR (local)	1990–1992	5.5	67.7	–	–	–
Gaevleborg (Sweden)[27]	PR (local)	1992–1999	1.9	69.0	71	>50.0	–
Teeside (United Kingdom)[28]	HR (local)	2000	1.3	69.0	–	–	73.0
Varese (Italy)[28]	HR (local)	2000	4.7	67.0	–	–	64.0
Castile and Leon (Spain)[29]	PR (regional)	1997	9.7	67.0	–	–	–
Vinaroz (Spain)[30]	HR (local)	1993–1997	5.6	67.0	–	–	–
Caceres (Spain)[31]	HR (local)	1990–1998	42.5	65.2	67	36.5	–
Madrid (Spain)[32]	HR (local)	2000–2001	9.9	66.6	68	–	–
Spain (EpicliCP-2003)[9,33]	HR (national)	2003	8.5	67.8	70	51.1	81.7

Abbreviations: HR, hospital records; PR, population records.
[a]Comparison between studies of the percentage of comorbidity is impossible because of differences in methodology.
[b]The male-to-female ratio for the USA was calculated using the adjusted incidence rates.

past. In terms of mortality, the male-to-female ratio has been declining since 1995 (Table 1). With respect to incidence, the authors of a recent Spanish multicenter epidemiological study (EpicliCp-2003) found marked differences between regions in this ratio, probably attributable to small differences in the timing of the massive incorporation of women into the smoking population.[9] In any case, the male-to-female ratio is still substantially higher in Spain (8.5 in 2003)[9] than in other Western countries, where it varies between 1.3 and 4.5 (Table 3). [22-28]

With respect to age on diagnosis, there is a clear upward trend and in Spain over 50% of lung cancer cases are now diagnosed in patients over 70 years of age. The mean age is close to 70 in most registries.[9,29-32] These trends reflect, at least in part, the aging of our population, and probably mean that patients tend to have more concomitant diseases when lung cancer is diagnosed.

Distribution by Histological Type

Worldwide, the trend is towards an increase in the proportion of adenocarcinomas and a decrease in that of squamous cell carcinomas, although the rate of change has varied across different geographical areas. This trend was first observed in the 1970s in the USA, where adenocarcinoma is now, by a wide margin, the most common type of lung cancer.[22,34] This predominance is even more marked in Asia. In Singapore, Toh et al[35] reported 69.9% of adenocarcinomas among nonsmokers as compared to 47.3% in ex-smokers, and 39.9% in smokers. In general, this is the type of carcinoma least closely linked to smoking, and the proportion of adenocarcinomas among nonsmokers ranges from 40% to 76% across different countries.[11] By contrast, it appears that a high cumulative tobacco consumption is a risk factor for the preferred development of small cell tumors.[36] In the USA, the proportion of small cell lung cancer decreased from 17.3% in 1986 to 12.9% in 2002.[37] This change has mainly been attributed to the decline in the number of smokers and the more widespread consumption of filtered cigarettes in the USA. However, another possible explanation for the shift may be that it is, at least in part, an artifact of changes in the pathologic classification of the disease, in that some tumors with neuroendocrine differentiation formerly classified as subtypes of small cell lung cancer are now identified as non-small cell lung cancer.[38] Notwithstanding the proportional decline in squamous cell carcinoma over the last 20 to 30 years, it is still the most common histological subtype among males in several European countries, accounting for 37% in France, 44% in Poland, and 45% in Holland in the period between 1993 and 1997.[39] In Spain, squamous cell carcinoma is still the most common subtype: 37.7% on average in the EpicliCP-2003 study[9] and percentages varying between 24% and 50.5% in local and regional registries.[29-32] Nonetheless, small cell lung cancer still accounts for some 20% of cases in most Spanish registries.[9,29-32]

Clinical Presentation

Asymptomatic Patients. Trends

In the first place, we must specify that in this section we are not talking about patients whose lung cancer is diagnosed in the course of population screening, in which case, ideally, 100% would be asymptomatic. We are referring to patients undergoing tests for a variety of reasons (preoperative examinations, suspected cardiac or respiratory disease, etc), who may have symptoms that the physician who diagnoses the lung cancer does not attribute to this disease. In such cases, the cancer is diagnosed fortuitously, usually as a result of the discovery of an abnormality in a chest radiograph. In such cases, it should be remembered that, although the lung cancer may be classified as clinically silent or asymptomatic, this is in general a diseased population or a population with comorbidities and a very different cohort to the healthy population that typically participates in population screening programs. The percentage of patients with no symptoms on diagnosis (5% in the USA in 1985[40] and 1.3% in Caceres, Spain in 1987[41]) has increased substantially. In a study carried out in 2000 to compare 2 European regions,1in England and 1 in Italy, lung cancer was asymptomatic in 7% and 21% respectively of the patients diagnosed.[28] A steady increase in this percentage has been observed in the Extremadura region of Spain, where it has gone from 1.3% in 1985,[41] to 11.5% in 1998,[42] and 18.1% in 2003.[33] This trend probably reflects a more active diagnostic approach characterized by the performance of more tests, especially chest radiographs, particularly in older patients. However, it is impossible to rule out the possibility that this trend may be influenced by the more indolent progression of the disease in an older population.[42]

Comorbidity

Although there are reasons to suppose that comorbidity has increased, it is difficult to analyze trends or to compare the results of different studies because of differences in the way the data were collected and recorded. Some authors supply incomplete details

Table 4
Lung Cancer (LC) Screening Using Computed Tomography (CT)

Author, Year, Country	No. of Patients Screened	Pathologic Findings in Baseline CT (%)	Cases With LC on Baseline CT, % of Patients Examined	Patients With Operable Tumors, % of Patients With LC	Cases of LC Diagnosed During Follow-up. Incidence Rate, %
ELCAP (world)[44]	31 567	13.3	1.3	84.9	0.27
Kaneko et al,[45] 2002,	1611	11.5	0.8	92.0	0.2
Diederich et al,[45] 2004,	817	43.0	2.1	100.0	0.2
Sone et al,[45] 2001, Japan	5483	5.1	0.4	100.0	0.4
Swensen et al,[45] 2003, USA	1520	51.0	1.7	76.0	0.3
Pastorino et al,[46] 2003, Italy	1035	5.9	1.1	91.0	1.1
Nawa et al,[45] 2002, Japan	7956	6.8	0.45	–	0.07
MacRedmond et al,[47] 2004, Ireland	449	24.0	0.4	100.0	–
Huskonen et al,[45] 2002, Finland	602	18.4	0.8	20.0	–
Millar et al,[45] 2004, USA[a]	3598	32.0	0.61	–	–
Callol et al,[48] 2001-2004, Spain	466	21.0	0.21	100.0	0.98
Vierikko et al,[49] 2003-2004, Finland[b]	633	14.0	0.8	40.0	–

[a] Workers in nuclear power plants.
[b] Workers exposed to asbestos.

about concomitant diseases and conditions and others limit themselves almost exclusively to reporting cardiac and respiratory disease. Furthermore, while some report concomitant disease in detail, others use scores that summarize comorbidity by way of a point scale (such as the Charlson index). In the EpicliCP-2003 study, 81.7% of the patients diagnosed had comorbid disease,[33] a somewhat higher percentage than that recorded in other European registries (Table 3). In all registries, cardiorespiratory diseases were the most common comorbidities.

Lung Cancer Screening

Unlike the case of other common cancers, there is still no evidence to support the usefulness of screening to reduce lung cancer mortality. Current evidence does not support the usefulness of screening with chest radiography or sputum cytology,[43] and the results of large randomized trials assessing the effectiveness of low-dose radiation computed tomography have not yet been published. An observation of interest with respect to the many (mostly nonrandomized) studies that have analyzed the results of screening with computed tomography is the high percentage of images giving rise to a positive finding or a suspicion of malignancy (between 5% and 51% of imaging studies) (Table 4) although the percentage of confirmed cases of lung cancer (prevalence) following this initial examination is in the region of 1%.[44-55] Incidence (cases detected during follow-up) was somewhat lower. Bach et al[50] calculated the incidence per 1000 person-years to be between 10.3 and 20.4. Most of the cases of lung cancer detected during screening are in the early stages and are resectable. However, there is no evidence to date of any decrease in lung cancer mortality in screened populations,[50,51] and the practical problems involved include the high rate of false positives (between 22% and 36% of the patients who undergo thoracotomy procedures[48]).

Treatment Strategy

Resection Rate

While the proportion of patients diagnosed with lung cancer who undergo surgery is an important statistic for assessing the quality of health care systems and patient care, it is very difficult to obtain reliable data because many authors still fail to provide sufficient detail. Comparisons between different countries and regions are affected by the so called "denominator problem," a difficulty identified some time ago.[52] The SEER (Surveillance, Epidemiology, and End Results) data in the USA exclude patients whose diagnosis was not confirmed by cytology or histology. Consequently, the high resection rate reported in the USA (27%)[53] cannot be compared with the rate obtained using population-based studies in the European countries that try to include all patients diagnosed with lung cancer irrespective of such confirmation (Table 5). The resection rates for Holland (20%),[57] Finland (20%),[58] Sweden (8.2%),[27] and Scotland (10%)[25] probably offer a more reliable picture of the true situation. In a recent population-based study that analyzed data from 2 small European regions (1 in Italy and 1 in England) using identical methodology, the rates were 24% and 7%, respectively.[28] The resection rate was 14.8% in the Spanish EpicliCP-2003 study, which included all patients (irrespective of whether diagnosis was confirmed by histology or cytology) and all histological types (small cell and non-small cell lung cancers).[9] Although it is difficult to identify trends because of the methodological differences mentioned above, it appears that the resection rate has not only failed to increase in comparison to previous years, but may in fact have decreased.[59-61] In some areas of Spain, the rate has decreased slightly, a trend that could be attributed to the high comorbidity associated with advanced age and, perhaps, to the more selective criteria currently used by thoracic surgeons to select candidates for surgery.[62]

Postoperative Mortality

In general, most authors define postoperative mortality as death occurring within 30 days of the surgical intervention. One broad review of global postoperative mortality reports percentages ranging from 1.3% in Japan to 8.6% in the USA.[63] More uniform figures have recently been reported in analyses of large case series in various countries: 4.1% in the USA according to the American College Of Surgeons,[64] 4.4% in Norway,[65] and 6.8% in Spain according to the Bronchogenic Carcinoma Cooperative Group of the Spanish Society of Pulmonology and Thoracic Surgery (GCCB-SEPAR).[66] However, as Duque et al indicated,[66] postoperative mortality rates are closely associated with patient-related factors, especially preexisting comorbidity (although male sex and advanced age are also associated with a significant adverse prognosis[65]), and the type of surgery undertaken—figures reported for postoperative mortality were between 3.2% and 16.7% for pneumonectomy and between 1.2% and 7% for lobectomy.[63] In the GCCB-SEPAR study, postoperative mortality was 12.3% for pneumonectomy, 4.3% for lobectomy, and 2.5% for minor resection.[66] The origin of the sample studied is also an important factor, since in national registries, such as that of Norway,[65] interhospital mortality varied from 0% to 12%, percentages that coincide almost exactly with the figures reported in Spain by the

Table 5
Lung Cancer: Treatment and Overall Survival (3 or 5 years) in Different Regions

Country or Region	Type of Record. Scope	Study Period	Patient Inclusion	Unconfirmed Cases, [a] %	Resection Rate, %	Only Palliative Care, %	Absolute (A) or Relative (R) Survival	Overall Survival, %
USA[10]	PR (national)	1995–2000	Incomplete. Only confirmed cases	0.0	27	12.5	R	15.7 (5 years)
Europe[54,55]	PR (supranational)	2002–2002	Incomplete coverage in some countries	10.0 [b]	–	–	R	10.8 (5 years)
Nottingham (United Kingdom)[24]	HR (local)	1998–2001	Complete [c]	12.0	12	36.0	A	6.9 (5 years)
Scotland [25]	PR (regional)	1995	Complete [c]	25.9	10.7	43.2	A	7.0 (3 years)
Oulu (Finland)[26]	PR (local)	1990–1992	Complete [c]	4.0	20	36.0	A	12.0 (5 years)
Gaevleborg (Sweden)[27]	PR (local)	1992–1999	Complete [c]	13.7	8.2	ND	–	–
Golnik (Slovenia)[56]	HR (local)	1996	Complete [c]	3.0	23	33.0	A	7.8 (5 years)
Teeside (United Kingdom)[28]	HR (local)	2000	Complete [c]	28.0	7	50.0	A	7.0 (3 years)
Varese (Italy)[28]	HR (local)	2000	Complete [c]	18.0	24	25.0	A	14.0 (3 years)
Castile and Leon (Spain)[29]	PR (regional)	1997	Complete [c]	13.6	–	–	–	–
Vinaroz (Spain)[30]	HR (local)	1993–1997	Complete [c]	4.0	23	29.9	A	7.6 (5 years)
Caceres (Spain)[31]	HR (local)	1990–1998	Complete [c]	0.7	19.3	40.5	A	7.9 (5 years)
Madrid (Spain)[32]	HR (local)	2000–2001	Only confirmed cases	0.0	20	19.6	A	13.0 (5 years)
Spain (EpicliCP-2003)[9,33]	HR (national)	2003	Complete	7.2	14.9	29.8	A	13.8 (3 years)

Abbreviations: HR, hospital records; ND, no data; PR, population records.
[a] Cases not confirmed by cytology or histology.
[b] This percentage (10%) refers to all cancers (not only lung cancer).
[c] Records that attempt to include all diagnosed cases including those not confirmed microscopically.

GCCB-SEPAR (from 0% to 11.6%). Finnish authors have recently reported that mortality is significantly lower in hospitals where the surgical volume is higher (>20 interventions per year).[67] While a detailed analysis of risk factors and their influence on postoperative mortality falls outside the scope of this article, we can cite an overall assessment of comorbidity as measured on the Charlson index by Strand et al.[65] Those authors found that mortality ranged from 3.8% in patients without comorbidity to 15.4% in patients who scored at least 5 on the index.

Symptomatic or Palliative Treatment

Clearly, the use of chemotherapy to treat non-small cell lung cancer has become widespread in the last 10 to 15 years, and especially since 1995. More recently, we have seen the introduction of new chemotherapy regimens that are easier to administer and have a better toxicity profile and new drugs (some administered orally) that specifically target the neoplastic cells. In the end, however, a very high percentage of patients still receive only palliative medication, with recent studies in Europe reporting the following percentages: 25% (Varese, Italy),[28] 50% (Teesside, England),[28] and 29.8% (Spain)[33] (Table 5). Comorbidity and advanced age may to a large extent explain these figures, although other factors, such as a lack of confidence in the efficacy of the available medication on the part of the patient, and even of some physicians, may also influence this decision.

New Drugs

Recent randomized trials indicate that some of the new drugs that target specific components or areas of the neoplastic cell (erlotinib, bevacizumab) can achieve an increase in global survival of approximately 2 months.[68,69] It should be remembered that this represents an increase of 20% with respect to the expected survival for patients with advanced stage disease treated with chemotherapy alone, since life expectancy in these patients is 10 months. It should also be said that on average chemotherapy only affords these patients (stage IV non-small cell lung cancer) an additional 2 months survival compared to those who receive only palliative care,[70-73] and that it is now universally available. However, both patients and physicians find 2 months to be such a short period that they have serious doubts about the value of such therapy. It is, important, however, not to think in terms of mean figures but rather to evaluate the possible benefits on a case-by-case basis. In reality, the effect of chemotherapy and of these new drugs is very varied, as varied as the tumors and the patients themselves. In effect, what still happens is that many patients may not obtain any benefit or may even be harmed by treatment, while others receive a more substantial benefit and, probably, obtain an increase in survival considerably greater than 2 months, which is only the overall average. Consequently, answering the following vital question is a priority objective in current research: what is the best way to select the tumors that will respond favorably to these new treatments? The intensive search for biological or molecular genetic indicators or markers has opened the door to hope, but applying the findings to clinical practice has not yet produced any clinically significant improvements in survival, except in a very small minority of cases.[74,75]

Survival

The problem of differences in the denominators used in different datasets affects survival statistics in the same way as it affects the resection rate.[76] In this article it is impossible to discuss in detail all the biases that could arise from differences in the type of analysis (population-based or hospital-based, complete or incomplete

Table 6
Survival After Surgery by TNM Stage in Lung Cancer Patients

	Overall Survival at 5 Years, %					
	Mountain (USA), 1975–1988[82]		Asamura (Japan), 1999[81]		Pfannschmidt (Heidelberg, Germany), 1996–2005[80]	
Stage	Clinical TNM	Pathologic TNM	Clinical TNM	Pathologic TNM	Clinical TNM	Pathologic TNM
IA	61.0	67.0	58.8	58.3	–	68.5
IB	38.0	57.0	58.0	60.2	–	66.6
IIA	34.0	55.0	47.1	40.6	–	55.3
IIB	24.0	39.0	25.3	41.1	–	49.0
IIIA	13.0	23.0	29.0	28.3	–	35.8
IIIB	5.0	–	36.3	34.6	–	35.4
IV	1.0	–	27.8	30.8	–	33.1[a]

[a] This percentage refers to 3-year survival.

coverage of registries), the inclusion criteria (particularly with respect to the inclusion or exclusion of cases not confirmed by cytology or histology), the percentage of cases lost to follow-up, and so on. Some authors provide details about the methods used.[76-79] Table 5 summarizes data relevant to the correct interpretation of overall survival statistics. It is also worthwhile emphasizing the possible confusion that may arise from differences in the presentation of data: sometimes (particularly in very large national cancer registries) the figure reported is relative survival, a rate obtained by dividing the absolute survival of the patients with lung cancer by the survival for a group of the general population having a similar structure in terms of age and sex.[77,78] Since lung cancer is a disease that particularly affects older people, the differences between absolute and relative survival can be considerable.[77,78] Comparisons between hospitals and regions are rendered more difficult by all these differences in the methods used. However, it has been possible in some countries (USA),[10] regions (Oulu, Finland),[58] and hospitals (Hospital San Pedro in Caceres)[31] to distinguish trends over time, and the trend observed in all of these studies has been an increase, albeit very slight, in the overall survival rate. As can be seen in Table 5, overall survival at 5 years, expressed in absolute terms, does not reach 15% in any country (the 15.7% rate cited for the USA refers to relative survival[10]), and the absolute survival rate is less than 10% in many parts of Europe.[24,28,30-32,54-58,79]

The life expectancy of patients who undergo surgery appears to have improved somewhat, although once again comparisons between hospitals are difficult owing to differences in the periods of time studied, the type of registry, and the data collection protocols used. Table 6 shows the results of 2 recent large case series (1 of regional scope in Germany, and the other a national study in Japan),[80,81] together with the already classic and older results from Mountain (USA).[82] The data on survival is shown by clinical and pathological TNM Stage.

Waiting Times for Treatment

While the increase in the number of diagnostic or staging procedures and functional evaluations carried out in patients with lung cancer and the need for multidisciplinary coordination between different specialties (leading to the successive referral of patients) have contributed to more precise diagnoses, at the same time these changes have resulted in the multiplication of medical acts, undoubtedly contributing to often excessive delays in the start of treatment. Although waiting times can vary greatly—as can the ways they are measured—special importance has for many years been placed on the waiting time for surgery in candidates for such procedures. The GCCB-SEPAR[83] recorded a mean waiting time of 35 days from confirmation of diagnosis to surgery in patients with stage I and II lung cancer. Cañizares et al[84] recently reported a waiting time in Spain of 56.87 days between the date of first application for care and the eventual surgery. In a Manchester hospital, the median waiting time for surgery (after completion of the necessary tests) was 25 days.[85] Although almost all of the studies agree that these waiting times have no effect on overall survival and that the primary factor determining survival is the innate biological behavior of the tumor,[85] it is also generally agreed that it would be desirable to shorten, as far as possible, these waiting times, which at the very least cause considerable anxiety and anguish to patients and family members. In the United Kingdom, the National Cancer Plan has designated as acceptable the following maximum waiting times for lung cancer treatment: 14 days from referral by a general practitioner to first examination by a specialist; 31 days from the decision to treat to start of treatment; and 62 days from the initial referral by the general practitioner to the start of the first (or only) treatment. Researchers in the United Kingdom recently observed that while median times were similar to or shorter than the recommended targets when it was taken into account that the recommendations refer to maximum waiting times only some 50% of patients were treated within an acceptable time interval.[86]

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