

The ARCHIVOS Archive, 2004: an Overview of the Research Published in ARCHIVOS DE BRONCONEUMOLOGÍA

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Introduction

This review is intended to offer the reader a brief overview, neither critical nor exhaustive but, rather, descriptive, of the original articles published in ARCHIVOS DE BRONCONEUMOLOGÍA during 2004. The publications are organized into knowledge areas that broadly correspond to the assemblies into which the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) is organized.

Respiratory Failure and Sleep Disorders

Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) was the clinical condition that generated the most original articles published in ARCHIVOS DE BRONCONEUMOLOGÍA in 2004. Articles were published on nearly all clinical aspects of COPD. In the field of epidemiology, Claret et al¹ undertook a 3-year follow up of a cohort of 164 smokers recruited in a primary care setting. After performing spirometry and a minimal antismoking intervention, they identified 22% of subjects who met the criteria for COPD. An interesting finding of this study at 3-year follow up was the detection of an additional 16% of smokers who met the criteria for COPD and a further 18% of previously diagnosed patients who displayed an accelerated loss of forced expiratory volume in the first second (FEV₁), irrespective of the outcome of the minimal antismoking intervention undertaken. This study demonstrates how spirometry can be used for the efficient screening of smokers in primary care and how monitoring can identify potential COPD patients with a poor prognosis. These findings further support international recommendations and those of SEPAR regarding the necessity of screening all smokers in order to facilitate correct early diagnosis.^{2,3}

The known phenotypic variability of the clinical presentation of COPD was clearly illustrated in a study by Soler et al⁴ in which nutritional state was evaluated in a large series of patients with stable COPD. Of the 178 cases evaluated, 19% presented a body mass index (BMI) that fell in the lower quartile of the reference population and, therefore, could be considered malnourished. They also found a direct relationship between BMI and FEV₁ as a percentage of the predicted value; however, this relationship was highly variable and patients with low body mass could be detected at all levels of FEV₁. This study highlights the necessity of evaluating nutritional state in patients with COPD, since low BMI—eg, less than 21 kg/m²—is an independent determining factor in COPD mortality and it has been demonstrated that it can form part of multidimensional models used to evaluate the disease.⁵

Although dyspnea is the cardinal symptom of COPD, its intensity is highly variable among patients, irrespective of disease severity. Dyspnea is not easy to measure clinically and the reproducibility of methods used to provoke it in the laboratory is not good. Martínez Francés et al⁶ evaluated the suitability of various methods with which to assess the perception of dyspnea through resistive loading of the respiratory system, in their case using a bronchial challenge test. In a large series of patients (n=70) with a wide range of FEV₁ they found a high percentage of hypoperceivers and showed that the change in Borg scale rating is a useful means with which to identify them. Although the applicability of these findings remains to be established, patient monitoring may allow identification of a subgroup that is particularly susceptible to the development of respiratory failure and hypercapnia due to an inability to “sense” situations of acute obstruction, as in exacerbations.

Exacerbations are the principal cause of death in patients with COPD. Various articles published in ARCHIVOS in 2004 addressed this problem. González et al⁷ undertook a 3-month follow up of a series of 90 patients with COPD discharged following hospitalization for COPD exacerbation. Multivariate analysis of a number of potential predictors revealed that patients who presented cor pulmonale or a high pressure-time index had a higher risk of readmission due

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to exacerbation. In the retrospective series of Raurich et al,⁸ the presence of cor pulmonale was also a predictor of in-hospital mortality due to severe exacerbation of COPD. These authors studied 101 patients treated with invasive mechanical ventilation for COPD exacerbation and followed them for at least 2 years. The only predictors of in-hospital mortality were cor pulmonale, multiorgan dysfunction syndrome, and age, while no predictors of long-term mortality were identified. Given that the authors work in an intensive care setting, it is possible that they did not have access to other tests that might have been useful for the identification of other predictive variables. Nevertheless, these 2 articles highlight the potential importance of untreated chronic hypoxia and the development of pulmonary hypertension in the natural history of COPD.

Management of COPD is both complex and expensive, and despite the many guidelines that are available, its treatment must be individualized. Last year, ARCHIVOS published 3 articles on the clinical management of this disease. De Miguel et al⁹ undertook a cross-sectional, multicenter study to evaluate the possible influence of the level of patient care—primary or specialized—on the management of the disease. When they specifically evaluated the quality of life of patients attended by either primary care physicians or pneumologists, they found no difference between the groups, despite the greater severity of the COPD treated by pneumologists. The authors drew attention to the inability of current quality of life measurements to reflect the full range of patients with COPD. Respiratory rehabilitation is an indispensable therapeutic resource; however, Spanish pulmonology departments have only recently begun to take advantage of it. Although its effectiveness is unquestionable, there are differences in the methods used. Ruiz de Ocaña et al¹⁰ enrolled 35 patients with severe COPD in a peripheral muscle training program with 2 intensity levels (mean [SD] of 70 [22] W and 35 [10] W). They found that the more intense treatment caused more significant changes in the normal breathing pattern—superficial breathing—and that these changes were accompanied by less work of breathing and a larger ventilatory reserve. Unfortunately, these beneficial effects were not maintained in the medium term, suggesting that patients with severe COPD should probably be kept indefinitely on rehabilitation programs. For patients in the final stage of COPD, the development of hypercapnic respiratory failure leads to a requirement for mechanical ventilation, yet its use in the home is not well standardized: José Miguel Rodríguez et al¹¹ undertook one of the largest studies in Spain of patients receiving noninvasive ventilation (NIV). In a descriptive, cross-sectional study, they addressed bacterial contamination of NIV equipment. They found that 15% of the ventilators tested were contaminated, most commonly by *Staphylococcus aureus*, and that inadequate cleaning was the main variable associated with contamination. Although the clinical implications of this finding were not specifically addressed, the results highlight the importance of correct maintenance of home

NIV equipment, especially taking into account the current increase in its use.

ARCHIVOS has published basic research into COPD in 2 articles. Casadevall et al¹² resolved a methodological dilemma regarding the reliability of samples taken from respiratory muscles either during thoracotomy performed to treat localized pulmonary lesions or in outpatients under local anesthesia. No differences in the ultrastructure of the fibers or in cytokine expression were seen between the 2 sample types. This study opens a range of possibilities for obtaining respiratory muscle samples for analysis by either histology or molecular biology. A group from the Colombian Foundation for Pneumology (*Fundación Colombiana de Neumología*), one of the most active groups in Latin American pulmonology, studied factors involved in exercise limitation in COPD patients living at high altitude, with the associated hypoxemia that this implies.¹³ Using an incremental test on a cycle ergometer, they assessed the exercise capacity of 25 patients with COPD of varying severity and 16 healthy subjects in Bogota, Columbia (2640 m). The determining factors in exercise limitation were essentially the same as those in COPD patients living at sea level; ie, mechanical impedance at rest and dynamic hyperinflation caused by exercise. However, they also found more severe hypoxemia during exercise, representing an additional load that disproportionately increases minute ventilation and causes a greater reduction in inspiratory capacity. This study concluded that hypoxemia and its treatment is of widespread importance in patients with COPD, especially in those who live above a certain altitude.

Obstructive Sleep Apnea Syndrome

Spain is playing an important role in the understanding of obstructive sleep apnea syndrome (OSAS) and local treatment guidelines have been available for some time.¹⁴ Paradoxically, information has not until recently been available regarding the availability of sleep units in Spain. This issue was addressed by Joaquín Durán et al.¹⁵ Using a specific questionnaire and telephone contact with 461 general hospitals in Spain, the authors found that sleep studies were undertaken in “only” 47.5% of the hospitals—which represents 0.49 polysomnographs (PSG) per 100 000 inhabitants. Only 47% of those units performed continuous positive airway pressure titrations, the majority of them empirically. The authors suggested that diagnostic resources should be increased to reach a level of at least 1 PSG per 100 000 inhabitants.

Among the consequences of OSAS, vascular disease—cardiac and cerebral—has been the subject of extensive research in the last 10 years and the sleep research group of SEPAR is very active in this area. In the May issue of ARCHIVOS DE BRONCONEUMOLOGÍA, Martínez et al¹⁶ investigated the prevalence of sleep-disordered breathing in patients admitted to hospital for acute ischemic stroke. They performed a polysomnograph within the first 72

hours of the onset of neurological symptoms in 139 unselected patients and found that 85% presented an apnea-hypopnea index of more than 10 and that 32% also displayed daytime sleepiness—Epworth score greater than 10. Despite the lack of PSG data prior to stroke, the authors interpreted these results as a reflection of the possible presence of OSAS prior to stroke and, therefore, the importance of OSAS as a factor in the pathology of cerebrovascular disease.

Cranial structure, upper airway morphology, and specifically, the configuration of the pharynx can be altered in patients with acromegaly.¹⁷ Blanco et al¹⁸ presented a study using polysomnography in patients with acromegaly. Clinical OSAS was present in 29% of patients with acromegaly; in a parallel study the authors did not find factors predictive of the severity of OSAS, such as hormonal activity or cephalometric indicators. Thus, their study suggests that polysomnography should be performed in all patients with features of acromegaly, irrespective of the clinical presentation.

Techniques and Transplantation

Thoracic Surgery

Videoassisted thoracoscopic surgery (VATS) has represented something of a worldwide revolution in the field of thoracic surgery. In this field, SEPAR has an active group that has assessed the use of VATS in Spain through a multicenter study. Treatment of spontaneous pneumothorax represents almost 50% of the cases in which VATS is applied in Spain.¹⁹ The SEPAR guidelines for the diagnosis and treatment of spontaneous pneumothorax propose VATS as the technique of choice in spontaneous pneumothorax without complications.²⁰ There is a lack of agreement on the timing of the use of VATS. Rivo Vázquez et al²¹ analyzed the implications of delaying VATS in a series of 57 cases of spontaneous pneumothorax. Those authors found that delayed use of VATS until second or third episodes of pneumothorax was accompanied by higher morbidity and a higher percentage of thoracotomies performed. They therefore suggested that VATS should be employed in the first episode of contralateral pneumothorax and the second episode of ipsilateral pneumothorax.

VATS procedures have expanded diagnostic and therapeutic possibilities. Last year, ARCHIVOS DE BRONCONEUMOLOGÍA published the results of using this technique for the treatment of palmar hyperhidrosis and myasthenia gravis. Loscertales et al²² published the results of a series of 116 patients with palmar hyperhidrosis treated by bilateral sympathectomy performed using VATS. They reported spectacular results, with a 100% success rate in terms of curative treatment of hyperhidrosis. Although at 12-month follow up 67% of patients had developed compensatory sweating, this did not alter their quality of life and patient satisfaction was maintained. Six months after the publication of this study, Moya et al,²³ from Hospital de

Bellvitge in L'Hospitalet de Llobregat, Barcelona, addressed the development of compensatory sweating in patients with hyperhidrosis treated by sympathectomy performed using VATS. Using a large series of 123 patients, they found that 86% developed this side effect. Their results showed that the presentation of compensatory sweating does not have a predetermined pattern and does not depend upon the type of ganglia removed or the type of surgery performed. Quality of life was improved in all cases, including those that developed compensatory sweating. This is explained, according to the authors, by the disappearance of the significant inconvenience of hyperhidrosis. Patient satisfaction was similar in both series.

Sympathectomy is also used in cases of pathological facial blushing. Callejas et al²⁴ published what we believe to be one of the largest series of patients with incapacitating facial blushing (100 cases). Specifically, they reported the complications associated with the use of VATS in this procedure, indicating the superiority of the ultrasonic scalpel over diathermy due to the lower number of neurological complications—eg, chest pain or Horner syndrome—and avoidance of lesions in the vascular or lung tissue surrounding the resection site.

In 1999, the surgical group of Loscertales et al²⁵ described the technique of thymectomy for myasthenia gravis performed using VATS in ARCHIVOS. Last year they reported a series of 25 thymectomies using VATS.²⁶ While the procedure showed the same efficacy as the standardized classic thoracotomy approach, the rate of complications was much lower. The fact that this technique is less invasive, causes less pain, results in greater postoperative mobility, reduces hospital stay, and offers improved aesthetic results means that it will probably become the technique of choice for the surgical management of myasthenia gravis.

Thoracic surgery has reached the pinnacle of its development in the last 2 decades with the surgical treatment of lung emphysema and lung transplantation. The indications for lung volume reduction surgery in the treatment of emphysema in patients with COPD are now well established following the American National Emphysema Treatment Trial. The ideal candidates would be patients with heterogeneously distributed emphysema, preferably located in the upper lobes, and who do not improve their exercise capacity following pulmonary rehabilitation.²⁷ However, the variability of the results of lung volume reduction surgery was still apparent in the series of Juan Samper et al.²⁸ In this study the patients had very advanced emphysema, with an FEV₁ of less than 25% of the predicted value, and the results obtained were poor and short lived: 43% maintained functional improvement at 1-year follow up and mortality at 1 year was 28%. Consequently, the indications should be restricted to those proposed in the National Emphysema Treatment Trial—eg, FEV₁ greater than 25% of predicted value.

Experimental surgery is by necessity an element that is associated with the good performance of thoracic surgery

departments that undertake lung transplantation. This is true of the Las Palmas group in the Canary Islands, who evaluated the use of the cuff technique in rats as an experimental model for the analysis of ischemia-reperfusion injury and rejection during lung transplant.²⁹ That group described the technique and explored its benefits. The greatest advantages of this model were its reproducibility, potential to generate ischemia-reperfusion injury and rejection, its low cost, and the shorter duration of surgical procedures. Disadvantages included the long time required to learn the technique and the need for staff with surgical experience.

Airway Endoscopy

Airway endoscopy continues to be an area of pneumology in which advances are constantly made. For the diagnosis of peripheral pulmonary lesions, transbronchial biopsy (TBB) was traditionally used with fluoroscopic guidance, with variable success (40%-60%). Haro et al³⁰ described a large series of 164 patients in whom they used the classic TBB technique, referred to by the authors as bronchoscopic lung biopsy, for the analysis of nodules and peripheral masses. Larger lesions, presence of the bronchus sign, and greater number of tissue samples were associated with the greatest improvement in diagnostic yield. The use of bronchoalveolar lavage (BAL) for the diagnosis of pulmonary infections is cost efficient, especially in immunocompromised patients. When Vega-Briceño et al³¹ analyzed its usefulness in 54 immunocompromised children, BAL showed a diagnostic yield of 40%. The authors suggested that the main application of the technique is in fever episodes associated with bilateral, diffuse, and nonspecific infiltrates. The most common complication was mild and transient hypoxemia, with major complications only encountered in 6% of cases. The method proved to be safe for use in pediatric intensive care.

Smoking

Pneumology can be considered a leader in the worldwide effort to combat smoking; ARCHIVOS has traditionally been a forum for speaking out in this debate. The extensive activity in this area, not only in patient care but also in basic research, is reflected in the numerous original articles published by a variety of research groups in 2004.

Peris et al³² investigated the epidemiological characteristics of smoking in a health care district of Valencia, Spain, in a study of 3633 adults. The proportions of smokers (23%), ex-smokers, and individuals who had never smoked obtained in this study differed from those found for the general population, perhaps because the population used was different from that of other surveys. While 50% of subjects indicated that they did not wish to give up smoking, 25% to 45% of patients attending primary health care centers would require specific attention related to smoking.

The training of many doctors in relation to smoking is inadequate. The ideal time at which to develop awareness of smoking-related issues is during their undergraduate training. Nevertheless, as shown by Nerín et al,³³ the reality is somewhat different. Analysis of the prevalence of smoking alongside awareness of the associated problems in medical students showed that the percentage of smokers increased during the first years of training, despite increased awareness of the effects of smoking. With the same goal of assessing smoking in medical students and the effect of university medical training in this area, Mas et al³⁴ sent questionnaires to all sixth-year medical students in Spain. They found that 27% of the students were smokers, slightly less than the figure in health care workers and doctors shown in previous health surveys or the prevalence described for the general population. Nevertheless, a large number of these smokers began whilst studying medicine, rather than either giving up or not developing the habit. These studies indicate that the period of undergraduate training is a lost opportunity in the fight against smoking and that, along with other teaching problems—eg, the limited time available for practical training, a profound change in the curriculum for the teaching of medicine is needed in Spain.

Given that initiation of smoking is associated with school age, understanding the motivation to develop the habit is the focus of numerous studies. Nebot et al³⁵ studied 1056 children beginning their first year of secondary school in 44 schools in Barcelona and undertook a 3-year follow up. The authors studied the odds ratio of smokers and nonsmokers in relation to taking up smoking and described a profile of adolescents who began smoking: prosmoking attitude, intention to smoke in the future, poor self-efficacy in resisting pressures to smoke, and siblings who smoke. Among girls, the profile would be low self-esteem, lower antismoking attitude, siblings who smoke, high socioeconomic level, and spending large amounts of time in discotheques. Some of these factors are modifiable and should be taken into account in the design of antismoking programs directed towards adolescents.

Young people are unaware of the existence of resources for smoking cessation or where they can ask for help to give up. Franco et al³⁶ studied a population free of socioeconomic or educational bias consisting of young people who attended local youth centers. They found a prevalence of 44% smokers, little desire to give up (23%), and a link between smoking and weekend alcohol consumption (59%). The majority of the smokers were unaware of resources available to aid in giving up. In another group of young people, university students who actively participate in sports activities, Nerín et al³⁷ found a lower prevalence of smoking (30.3%) than seen in the study of Franco et al. This inverse relationship between physical exercise and smoking, already reported by previous authors, was, nevertheless, weak in this study. However, the majority of the students surveyed related tobacco consumption to

a reduction in physical performance and a larger number of smokers (46%) indicated a desire to give up. Therefore, although participation in sporting activities is not an independent determining factor in smoking abstinence, it appears to endow active smokers with a better predisposition to give up their habit. In an editorial accompanying these 2 articles, Sánchez Agudo³⁸ reflected on the significant current problem of the fight against smoking and suggested that efforts should center preferentially on childhood.

The search for indicators of success in smoking cessation clinics was the objective of 2 original articles published last year. García et al³⁹ published results from the Cornellà Health Interview Survey Follow-up Study, a cohort study based on 2500 individuals representative of the general population. After 8 years of follow up, 28% of smokers had given up spontaneously. Men were found to be more likely than women to have given up smoking, and age and higher educational level were associated with smoking cessation in this group. The second study found that factors predictive of success at 6 months in a specialized smoking cessation clinic were short-term abstinence (1 week), medium-term abstinence (3 months), and compliance with group therapy.⁴⁰ Neither sociodemographic nor tobacco consumption variables were good indicators of success. Therefore, motivations for giving up smoking spontaneously or through the use of smoking cessation clinics cannot be superimposed and represent distinct motivational profiles.

Oncology

Death due to lung cancer continues to increase worldwide and in Spain is responsible for 8% of deaths in men and 1.1% in women. In ARCHIVOS, 3 studies were published last year on the prevalence of lung cancer and survival rates in different parts of Spain. A group from Cáceres, led by Sánchez de Cos, studied 610 patients diagnosed with lung cancer over a period of 1 to 6 years.⁴¹ Overall survival at 5 years determined from Kaplan-Meier curves was reported at 7.9%. This percentage is similar to those obtained in studies performed in the 1970s. The authors suggest that the low survival rate is caused by the advanced stage at which the tumor is diagnosed, the low number of curative thoracotomies performed, and particularly, the poor medium and long-term efficacy of current nonsurgical alternatives. Hernández et al⁴² evaluated the characteristics of lung cancer in Ávila and compared them with the rest of the autonomous community of Castile-Leon, the rest of Spain, and Europe. In their series of 87 cases they found a crude incidence that was somewhat higher in Ávila than in other geographic areas, with increases in the prevalence when compared with data from 10 years earlier. With 10 years separating the series, the authors also found an increase in nonsurgical treatment but without any clear increase in survival. Finally, Miravet et al⁴³ followed 271 patients with lung cancer for 10 years in a health care

district of the province of Castellón. They found an incidence over the 10 years of the study of 20.4 cases per 100 000 population, slightly lower than the national incidence, an observation for which they had no explanation; a decreasing rate was found in women. Mean survival at 5 years was 15.8% and was influenced by histologic type and tumor stage at the time of diagnosis. Survival did not improve in patients included over the course of the 10-year study. These 3 studies suggest that the picture continues to be bleak in Spain in terms of prevalence and death due to lung cancer.

Given the high mortality due to lung cancer, various initiatives have been proposed for early diagnosis, based on the hypothesis that this will improve resectability. Padilla et al⁴⁴ reviewed survival in patients treated for stage I non-small cell lung cancer with a tumor diameter of less than 3 cm. In a large series, they found that survival at 5 and 10 years increased according to the time at which they were treated within a 30-year period (1970-2000), such that patients operated on between 1991 and 2000 had a 5-year survival of 84%, while only 58% of those operated on between 1970 and 1980 survived beyond 5 years. Tumor size—less than or exceeding 2 cm in diameter—affected survival. The authors speculated on the suitability of the current TNM classification, as a result of the phenomenon of prognostic stage migration described for non-small cell lung cancer in their study.

Carcinoid tumors continue to be the most common slow-growing primary thoracic tumors. Iglesias et al⁴⁵ performed a retrospective analysis of patients surgically treated for this type of tumor. The tumor continues to be more common in men and has a good long-term prognosis following surgical treatment. Survival depended on histologic type—lower in cases with atypical carcinoids—and the presence of distant metastases. The other article published in 2004 on a patient series with thoracic tumors addressed pleural mesothelioma.⁴⁶ That study, based on 62 cases treated in Hospital 12 de Octubre in Madrid, revealed an increase in the incidence of pleural mesothelioma in recent years. The authors described the clinical and radiologic presentation and the characteristics of the pleural fluid. Patient survival was similar to that found in other studies. Multivariate analysis revealed that general clinical status (Karnofsky scale), increased platelet count, and reduced serum albumin levels were associated with poor prognosis.

Tuberculosis and Respiratory Infections

Diagnosis of tuberculous infection continues to be established as was initially proposed 100 years ago, through the Mantoux reaction following intradermal injection of tuberculin. Fernández et al⁴⁷ analyzed the clinical response to tuberculin stored for different lengths of time after opening of the vial. The authors sought to determine the antigenic capacity of tuberculin after first use. In a prospective, cross-sectional study

using different vials of tuberculin they found that purified protein derivative RT-23 tuberculin, which is currently in use in Spain, does not lose potency despite the vials being kept open for 1 week or even 1 month. They also observed no bacterial contamination of the product or local infections. Costs could be reduced by issuing storage instructions, since in many cases the vial is discarded following first use.

Tuberculin is the basis of active tuberculosis case finding in the general population. ARCHIVOS published the results of a study undertaken in 3651 immigrants by the Center for the Prevention and Control of Tuberculosis in Barcelona.⁴⁸ The main conclusions were that there was a higher proportion of positive tuberculin reactions (51%) and a higher prevalence of tuberculous infection (34.4%) in the individuals studied than in the local population. One of the difficulties encountered in this study was establishing the positivity threshold for the tuberculin test. Active case finding proved to be efficient and useful for estimating the impact of immigration from countries with a high prevalence of the disease. The authors drew attention to a possible increase in endemic tuberculosis in Spain and the necessity of developing specific strategies for immigrants.

Community-acquired pneumonia (CAP) among the elderly living in nursing homes is a major cause of death. Martínez-Moragón et al⁴⁹ analyzed the characteristics of CAP in individuals over 65 years of age admitted to hospital over an 18-month period. Mortality was higher in elderly patients living in care homes than in those living at home: 28% and 4.5%, respectively. Analysis of these differences indicated that patients in care homes are older, have multiple diseases, and have greater functional deterioration. The microorganisms responsible for CAP did not appear to differ between the 2 groups. In this study, increased urea level was a predictor of poor prognosis.

Other Areas

Respiratory Physiology

Various studies were published in 2004 that are relevant for day to day practice. Giner and Casan⁵⁰ compared the oxyhemoglobin saturation obtained by pulse oximetry (SpO₂) and end-tidal CO₂ (PETCO₂) obtained by capnography with PaO₂ and PaCO₂ obtained by blood gas analysis in lung function laboratories. SpO₂ adequately reflected PaO₂. The mean difference between PETCO₂ and PaCO₂ values was 2.7 mm Hg and PETCO₂ can be considered to offer a very approximate indication of alveolar ventilation. Capnography and pulse oximetry are clearly useful for the noninvasive measurement of gas exchange.

Ricart et al⁵¹ explored the usefulness of lung function testing in patients with cardiac dysfunction of varying etiology. Spirometry revealed an obstructive pattern that was directly related to the cardiac mass obtained by electrocardiography. The type or extent of lung function

involvement did not allow the type or extent of underlying heart disease or its prognosis to be inferred.

Spirometry can provide information on respiratory flow, dynamic volume, and various flow-volume indices. Most indices have appeared and disappeared in clinical practice with the exception of FEV₁/FVC. Urrutia et al⁵² took advantage of data from a European study on respiratory health in which various hospitals in Spain participated to explore the advantage of measuring the FEV₂₅₋₇₅/FVC ratio as a predictor of bronchial hyperresponsiveness (BHR). A low ratio was found to be positively correlated with a high BHR independently of any of the other complicating factors analyzed. This ratio is an expression of the relationship between the lumen of the airway and the size of the lung, and when reduced, behaves as a factor in the pathogenesis of BHR.

Public Health

The economic impact of the most prevalent diseases is a concern for society. Masa et al⁵⁴ undertook a study of the costs of COPD in Spain using data on prevalence obtained from the IBERPOC study.⁵³ Forty-one percent of the cost is derived from hospitalization and 37% from drug therapy. The estimated total cost for 1997 was €238 million.⁵⁴ The authors found that the cost distribution did not meet recommendations on health care practices, suggesting that resources should be optimized and findings implemented in relation to all aspects of the disease.

One of the ways in which the balance of costs in the treatment of COPD and other chronic respiratory diseases can be improved is in correct treatment compliance. Since this is the basis of treatment effectiveness, improved compliance should lead to an improvement in the cost-benefit ratio. Giner et al⁵⁵ studied patient preferences for 3 popular dry-powder inhalation devices along with the factors that motivate compliance in 30 subjects with stable asthma. Despite the fact that the subjects were experienced in the use of inhalers, on a scale of 0 to 100 for 9 different features of their use, none of the subjects achieved the maximum score with any of the inhalers, the mean scores being 75, 67, and 65 for the Easyhaler, Accuhaler, and Turbuhaler, respectively. These scores are a long way from the maximum and indicate the necessity of persisting in the health education of patients.

Basic Science

In a study from Turkey, Çelik et al⁵⁶ presented data on the association between human leukocyte antigens (HLA) and sarcoidosis. The authors used a large series of patients (n=83) with different stages of disease. They found a positive association with alleles HLA A-9, HLA B-5, and HLA B-8, and a negative association with HLA A-24, HLA A-26, and HLA A-62. Allele HLA A-26 was found more frequently in patients who had a positive tuberculin test result. This type of study

should be reproduced in other populations, and if confirmed, HLA may be considered to play a positive or negative role in the pathogenesis of sarcoidosis.

Using the models of gas exchange proposed by West and the oxygen status algorithm proposed by Siggard-Anderson, Pérez-Padilla⁵⁷ undertook a study in Mexico of changes in the ratio of PaO₂ to the fraction of inspired oxygen (FiO₂) according to altitude and the percentage of pulmonary shunt. At higher altitude, the PaO₂/FiO₂ ratio was reduced and there was less shunt. The practical application of this observation is that patients with lung injury who live at higher altitudes will present a PaO₂/FiO₂ that is lower than that of patients at sea level for the same degree of injury.

Intensive Care

Virgos et al⁵⁸ evaluated the predictors of outcome in patients with blunt chest trauma in an intensive care unit. The requirement for intubation and mechanical ventilation, along with high positive end-expiratory pressure were found to be predictors of increased mortality. Patients treated in this way also presented more lung damage due to contusion and greater hemodynamic instability. These findings meet the profile of high-risk trauma that the authors have contributed to establishing in their paper.

In patients subjected to noninvasive ventilation, the presence of leaks is a serious problem that reduces the true level of ventilation and slows down clinical improvement and improvements in gas exchange. Rabec et al⁵⁹ from Dijon, France, proposed a simple system for monitoring leaks based on monitoring flow in the mask and simultaneous polygraph recording. They found that 76% of patients had leaks that required therapeutic readjustment; many of these patients appeared not to present problems of treatment intolerance. Treatment would not have been adjusted had the leaks not been measured.

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The impact factors of Spanish journals can be considered as moderate. Aleixandre et al⁶⁰ of the Spanish Consejo Superior de Investigaciones Científicas analyzed the citations of 87 Spanish medical journals and calculated their national impact factor and immediacy indices. The journals that obtained the highest national impact factor were *Revista Española de Quimioterapia* (0.894), *Medicina Clínica* (0.89), and ARCHIVOS DE BRONCONEUMOLOGÍA (0.73). The percentage of self-citation for ARCHIVOS was 18.3%. These results place ARCHIVOS among the 3 most scientifically important medical journals in Spain.

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