REVIEW ARTICLE

The Archivos Archive, 2007: An Overview of Research Published in *Archivos de Bronconeumología*

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Introduction

As was commented last year in a review of 2006 publications in *Archivos de Bronconeumología*,[1] the quality of original articles published that year was high, and that level was maintained in 2007. Moreover, this quality was once again reflected by the higher impact factor the journal achieved in 2007. When reporting on the scientific contribution of a piece of research, it is important to distinguish between quality, importance or relevance, and impact. Quality relates to how well a study is carried out (aspects such as originality, proper use of appropriate methodology, and study design); importance refers to the potential influence of the findings; and impact is a measure of the eventual repercussion of the research. In short, proper evaluation of research should take all of these 3 elements into account. This is clearly being done by the team at *Archivos de Bronconeumología*, since it could be said that the scientific quality of a journal begins to rise when the impact factor increases.[2]

As in the previous year, in 2007 a total of 59 original articles were published in *Archivos de Bronconeumología*. In this review, we have grouped the articles by subject matter, keeping as far as is possible to the format used in last year's review.

Chronic Obstructive Pulmonary Disease

It is well known that skeletal muscle dysfunction is common in patients with chronic obstructive pulmonary disease (COPD), and particularly in individuals with low body weight. Although the mechanisms underlying the development of this condition in COPD patients are poorly understood, the contraction-relaxation cycle in skeletal muscle depends on the cytoplasmic concentration of calcium (Ca^{2+}), and proteins of the sarcoplasmic-endoplasmic reticulum Ca^{2+} adenosine triphosphatase (SERCA) family are key regulators of this concentration. Morlà et al[3] investigated abnormalities in the expression and function of SERCA in the skeletal muscle of patients with COPD and low body weight. They found that the expression of SERCA2—a variant of messenger RNA (mRNA) expressed in slow-twitch fibers, cardiac muscle, and smooth muscle (SERCA2a) and also in a number of nonmuscle tissues (SERCA2b)—was lower in the group of patients with COPD and low body weight. SERCA2 was also tyrosine-nitrated in these patients. In an earlier study, the same authors had demonstrated the existence of a negative correlation between SERCA2 levels and concentrations of the inducible isoform of nitric oxide synthase in COPD patients with low body weight.[4] The fact that SERCA2 concentrations are lower and tyrosine-nitrated in the skeletal muscle of these patients is evidence of another cell abnormality that may be clinically significant in that it may limit their exercise capacity and quality of life.

As an alternative to respiratory muscle training with control of breathing pattern, Bustamante Madariaga et al[5] studied an inspiratory muscle training program in which load on an inspiratory muscle training device was adjusted at regular intervals to ensure that it was never too low but breathing pattern was not controlled. In this randomized controlled trial improvement was observed in both peak inspiratory pressures and Chronic Respiratory Questionnaire scores in patients who followed the training program, irrespective of whether a threshold device or a resistive load device was used. The authors did not find one training method to be better than the other.

In a trial that investigated the same subject in somewhat greater depth, Regiane Resqueti et al[6] evaluated the efficacy of a home-based pulmonary rehabilitation program for patients with severe-to-very-severe COPD and incapacitating dyspnea. On the basis of their findings, they confirmed that a pulmonary rehabilitation program including low-intensity muscle training of various muscle groups improved exercise tolerance, dyspnea, and some quality-of-life parameters, and that these benefits were maintained at 6 months in patients following a maintenance program.

The importance of dynamic hyperinflation in triggering dyspnea and limiting exercise tolerance in patients with COPD is well known. Lisboa et al[7] undertook to establish reference values for inspiratory capacity in healthy individuals of both sexes between 50 and 87 years of age in order to remedy the lack of such data in the literature. They found that a model including age, height, and weight produced prediction equations for inspiratory capacity and

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that their results were similar to those obtained by other authors using different models.

To obtain more information concerning the factors predictive of survival in COPD, Solanes et al[8] followed up a group of patients with this disease for 7 years. Overall survival at the end of the study was 53%. Using univariate analysis, they found a correlation between survival and age, degree of obstruction, inspiratory capacity, carbon monoxide diffusing capacity adjusted for alveolar volume, maximum voluntary ventilation, and maximum exercise tolerance. Maximum minute ventilation was the variable that best predicted survival: most of the patients with a maximum minute ventilation over 42 L/min survived the 7-year follow-up compared to under 55% of those with values under this threshold.

The impact of COPD on the daily life of patients is a subject that has been little studied. The aim of the EIME study carried out by Álvarez Gutiérrez et al[9] was to investigate the situation of COPD patients in Spain using a translated version of a disease-specific questionnaire designed to measure the impact of COPD on activities of daily living[10] and to analyze the relationship between the impact scores obtained and clinical parameters, lung function measurements, socioeconomic status, and health-related quality of life (HRQOL) as measured by the St George's Respiratory Questionnaire (SGRQ). They also tried to identify the variables that best defined the profile of the fragile patient requiring special attention. The results of that study confirmed that the ability to carry out the activities of daily living is greatly reduced in patients with COPD. With respect to socioeconomic variables, the profile of the fragile patient was defined by older age, a lower educational level and economic status, and a greater probability of being single, widowed, or living in a nursing or retirement home. The scores obtained on the impact questionnaire correlated closely with HRQOL and with the variables related to disease severity, such as dyspnea, number of exacerbations, and forced expiratory volume in 1 second (FEV_1). Moreover, the differences between the fragile and nonfragile patients in these parameters were statistically significant.

To make available more effective and easier-to-use tools for assessing quality of life, Camelier et al[11] evaluated the discriminatory properties and validity of the Airways Questionnaire 20 (AQ20) in a group of patients with obstructive airway disease, and compared its properties with those of the SGRQ and the 36-item Short Form Survey (SF-36). The results obtained with the AQ20 questionnaire correlated closely with the total score on the SGRQ and moderately well with all the SF-36 domains. In the regression model, the elements that best predicted the AQ20 score were baseline dyspnea index and 6-minute walk test distance. When the SGRQ was used as a reference, the level of accuracy achieved by the AQ20 was high.

Dealing with more clinical aspects of COPD, Miravitlles et al[12] undertook a systematic review of the literature and meta-analysis to compare the clinical efficacy of moxifloxacin to that of the other antibiotics routinely used to treat exacerbations of chronic bronchitis. Only 9 of the 45 studies identified fulfilled the inclusion criteria and were included in the meta-analysis. The conclusion was that moxifloxacin was "at least as clinically effective" as the standard treatments to which it was compared. Moreover, analysis of the results of the 9 studies revealed an aggregate mean difference in clinical success rate of 1.5% in favor of moxifloxacin. While not statistically significant, this difference clearly indicates a favorable trend.

Rodríguez Escolar and Fidalgo García[13] investigated trends among primary care physicians in Madrid in the prescription of drugs for the treatment of COPD and asthma during the period 1996-2002 and assessed the impact of new therapies. They found that drug use, expressed as defined daily dose per 1000 population per day, increased by 18.5% between 1996 and 2002, and that the use of inhalants increased by 33% over the same period. The drugs most used were β_2-adrenergic agonist inhalants (37.7%), anticholinergic agents (22.5%), inhaled corticosteroids (19.5%), combinations of fixed doses of long-acting β_2-adrenergic agonists with corticosteroids (10.5%) and xanthines (5.0%).

On the subject of treatment with continuous positive airway pressure (CPAP), Neme et al[14] investigated the physiologic effects of noninvasive mechanical ventilation with nasal masks using CPAP and CPAP plus pressure support ventilation. They confirmed that, in patients with severe COPD, CPAP of 3 cm H_2O with pressure support ventilation improved the breathing pattern, increased alveolar ventilation, and reduced work of breathing. These findings provide a rational basis for the use of noninvasive mechanical ventilation in the treatment of these patients.

Sleep Disordered Breathing

Vidal et al[15] compared the scores obtained by patients with sleep apnea-hypopnea syndrome (SAHS) in the various domains of the Spanish version of the Functional Outcomes of Sleep Questionnaire (FOSQ) with those obtained by healthy controls, and assessed the usefulness of this tool for evaluating the impact of sleepiness on activities of daily living in patients with suspected SAHS. Compared to the healthy controls, the patients with SAHS scored higher on the Epworth sleepiness scale and had a lower mean (SD) score not only on the FOSQ (88.7 [19.8] compared to 110.9 [9.8]; $P<.001$) but also in all its component domains except social outcome (intimacy and sexual relationships, activity level, vigilance, and general productivity). In a logistic regression model, the classification recommended by the American Thoracic Society guidelines was the least predictive of SAHS, while the most predictive variable was the Epworth sleepiness scale. The predictive value of the FOSQ fell between these 2 other alternatives.

In an up-to-date assessment of the diagnosis of SAHS in Spain, Masa Jiménez et al[16] reported on the evolution over time of this situation and provided a useful management tool for both specialists and health care administrations. The main variables used in their descriptive analysis of the diagnosis of SAHS in Spanish hospitals were the length of time patients had to wait for