Pulmonary research recently published in Brazilian journals*,**

Pesquisas em pneumologia recentemente publicadas em revistas brasileiras

Ariane Maris Gomes, Daniela Aquemi Higa

Abstract

We reviewed original articles in the field of pulmonary medicine that had been recently published in 12 Brazilian journals—general or specialty journals—excluding the Brazilian Journal of Pulmonology. All were journals indexed for the Institute for Scientific Information Web of Knowledge. The selection of articles was based on the “continuously variable rating” concept. We have organized the articles by category.

Keywords: Pulmonary medicine; Medical oncology; Research; Infectious disease medicine.

Introduction

We reviewed original articles in the field of pulmonary medicine that had been recently published in 12 Brazilian journals—general or specialty journals—excluding the Brazilian Journal of Pulmonology.

All were journals indexed for the Institute for Scientific Information Web of Knowledge. The selection of articles was based on the “continuously variable rating” concept.\(^\text{1}\)

The selected articles were divided into categories, which are listed here in descending order of frequency.

Mechanical ventilation

Among the articles selected, the most common topic was that of mechanical ventilation (MV).

We found thirteen recently published articles dealing with that topic.

According to Pantoni et al.,\(^\text{2}\) the level of continuous positive airway pressure alters post-operative HR variability and breathing pattern in patients submitted to coronary artery bypass grafting. The authors also demonstrated that 8–12 cmH\(_2\)O of continuous positive airway pressure provides the best pulmonary and cardiac autonomic function.

Vidotto et al.,\(^\text{3}\) showed that, in patients undergoing neurosurgery, extubation failure significantly increases the risk of death, as well as that of post-operative pulmonary complications and tracheostomy. The authors stated that, among the risks evaluated, only that of post-operative pulmonary complications was significantly increased by prolonged MV.

Casaroli et al.,\(^\text{4}\) evaluated a rat model of bacterial peritonitis. The authors found that pneumoperitoneum alone or in combination with controlled ventilation does not modify bacterial clearance via the peritoneal lymphatic system.

Ferreira et al.,\(^\text{5}\) compared a sigmoidal model and an exponential model to fit pressure-volume curves from mechanically ventilated patients under general anesthesia with idiopathic pulmonary fibrosis. The results suggest that respiratory system...
compliance is decreased close to end-expiratory lung volume in those patients.

According to Lopez et al., the need for more than 2 h of MV predicts the development of bronchopulmonary dysplasia in preterm infants with a gestational age > 26 weeks. The authors also suggested that the need for prolonged MV is an early marker of bronchopulmonary dysplasia.

Nery et al. suggested that daily screening of patients in order to identify those able to breathe without support, combined with noninvasive positive-pressure ventilation, reduces the duration of MV and total ventilatory support without increasing the risk of reintubation. That intervention was identified as an independent factor associated with survival.

Schifelbain et al. compared two weaning methods (pressure support ventilation and T-tube) and found no differences between the two methods in terms of Doppler echocardiographic, electrocardiographic, or other cardiorespiratory variables prior to and 30 min after weaning from MV, regardless of the outcome of the weaning. However, the authors found that cardiac structures were smaller, isovolumetric relaxation time was longer, and oxygenation level was greater in successfully weaned patients than in those who failed.

According to Almeida et al., the increase in the phase III slope normalized to tidal volume in asthma patients suggests that these patients have ventilation inhomogeneity in the distal air spaces. The authors speculated that this reflects chronic structural disorders or reversible acute changes seen on the bronchial provocation test.

According to Araujo et al., stress ulcer prophylaxis is a common practice in pediatric ICUs in the city of Porto Alegre, Brazil, ranitidine being the drug most commonly used. Chief among the various reasons given for providing the prophylactic treatment were the increased risk in patients on MV and the fact that it is part of the informal routine in those ICUs.

Carvalho et al. reported that the mean accidental extubation density was 5.34/100 patient-days on MV in a tertiary neonatal ICU, and that the duration of assisted ventilation was its only independent predictor. The authors also stated that the best accuracy for the occurrence of accidental extubation was achieved at 10.5 days of assisted ventilation.

Hanashiro et al. studied the impact that transferring a pediatric MV-dependent population from the ICU to MV dependency units or to home MV had on bed availability in the ICU. Their results suggest that the transfer of such patients increases ICU bed availability and that the survival rates for patients who are sent home on MV are similar to those for patients who remain hospitalized on MV.

Hentges et al. reported that detectable levels of caffeine in umbilical cord blood did not decrease the occurrence of apnea of prematurity but had a borderline effect on delaying its occurrence. That finding suggests that even low levels of caffeine in umbilical cord blood delays the occurrence of apnea spells.

According to Sukys et al., rapid sequence intubation is the method of choice for tracheal intubations performed in the emergency room, because it has proven to be safe and had a low incidence of severe complications. However, in that study, there was a low success rate, which the authors attributed to poor preparation for the procedure and limited experience on the part of the practitioner.

Diagnostic procedures

The second most commonly addressed topic was that of diagnostic procedures. Among the recently published articles evaluated, eleven dealt with that topic.

Anciães et al. induced experimental emphysema in BALB/c mice. The authors found that morphometric parameters are more reliable for detecting the presence of emphysema than are functional parameters measured by respiratory mechanics.

Bosch et al. described the functioning of a quick diagnosis unit in a Spanish public university hospital. The authors concluded that this type of unit represents a useful and cost-saving model for the diagnostic study of patients with potentially severe diseases.

Boskabady et al. evaluated individuals engaged in carpentry work in the city of Mashhad (northeast Iran). The authors found that such work is associated with a high frequency of respiratory symptoms, particularly after exposure to irritating chemicals during work.

Costa et al. studied the application of the pediatric risk of mortality score. The authors concluded that the score shows adequate
discriminatory capacity, being a useful tool for the assessment of prognosis in pediatric patients admitted to tertiary pediatric ICUs.

Faria et al.\(^{[19]}\) studied the use of the forced oscillation technique to investigate the mechanical properties of the respiratory system in order to detect early smoking-induced respiratory involvement, when pathologic changes are still potentially reversible. The authors concluded that the technique is a versatile clinical tool for the prevention, diagnosis, and treatment of COPD.

Guimarães et al.\(^{[20]}\) evaluated CT-guided percutaneous fine needle aspiration biopsy of pulmonary lesions. The authors found that the rate of complications was 14.4%, and that the rate was significantly higher when the lesions had no pleural contact than when they did.

Pimenta et al.\(^{[21]}\) proposed a new composite index (the desaturation-distance ratio), using continuous $\text{SpO}_2$ and the distance covered on the six-minute walk test. The authors concluded that the desaturation-distance ratio is a promising, reliable physiologic tool for the evaluation of interstitial lung disease.

Rocha et al.\(^{[22]}\) found that differences in renal function and tubular handling of potassium and phosphorus are present during the first week of life among preterm neonates who will develop bronchopulmonary dysplasia. The authors also found that patent ductus arteriosus and increased indomethacin use accentuate those differences.

Schachner et al.\(^{[23]}\) evaluated patients undergoing isolated coronary artery bypass grafting. The authors found that, among such patients, pre-operative levels of N-terminal pro-brain natriuretic peptide > 502 ng/mL predict mid-term mortality, as well as being associated with significantly higher rates of in-hospital mortality and peri-operative complications.

Vieira et al.\(^{[24]}\) developed and validated a predictive score for clinical complications during intra-hospital transport of infants treated in neonatal units. That score presented adequate discriminative power and calibration.

Boechat et al.\(^{[25]}\) performed a cross-sectional study of intra- and inter-observer reliability of HRCT images of very-low-birth-weight infants and concluded that there was quite good intra- and inter-observer concordance.

**Infectious diseases**

Among the articles evaluated, infectious diseases were quite frequently addressed. We found nine articles dealing with the diagnosis or treatment of infectious diseases.

Arslan et al.\(^{[26]}\) studied patients with community-acquired pneumonia. The authors found that plasma D-dimer levels, which are directly related to the intra- and extra-vascular coagulation that occurs in acute and chronic lung damage, were increased in those patients, regardless whether they had an accompanying disease that would normally cause such an increase.

Capelozzi et al.\(^{[27]}\) report a detailed histopathological analysis of open lung biopsy specimens from five patients with acute respiratory distress syndrome and confirmed H1N1 infection, which was evidenced by viral-like particles in lung tissue, as identified through ultrastructural examination. Bronchioles and epithelium, rather than endothelium, seem to be the primary targets of H1N1 infection.

According to Chung et al.\(^{[28]}\) various risk factors can predict pulmonary function deterioration following tuberculosis treatment. The authors stated that patients with significant respiratory symptoms and multiple risk factors require pulmonary function testing in order to monitor the progression of functional impairment, especially within the first 18 months after the completion of the treatment.

Soeiro et al.\(^{[29]}\) reviewed the autopsies of 4,710 patients with acute respiratory failure. The authors found that bronchopneumonia and cancer were the two most common diagnoses. The most prevalent pulmonary histopathological pattern was diffuse alveolar damage, which was associated with different inflammatory conditions.

In a study conducted in Brazil by da Silva et al.,\(^{[30]}\) 51 *Rhodococcus equi* isolates were identified in the sputum samples of 546 individuals suspected of having pulmonary tuberculosis. The authors described the epidemiology of the infection, as well as the phenotypic characteristics and drug susceptibility profile of the isolates.

Dias et al.\(^{[31]}\) found that, in BALB/c mice co-infected with tuberculosis and the intestinal helminth *Strongyloides venezuelensis*, interleukin-17A production by lung cells was reduced and susceptibility to *Mycobacterium bovis* was increased. The authors suggested
that intestinal infection with the helminth has a detrimental effect on the control of tuberculosis.

Boechat et al.\(^{(32)}\) described a scoring system based on abnormalities identified on HRCT scans of premature infants and measured the predictive validity of the score in relation to respiratory morbidity during the first year of life. According to the authors, the scoring system is reproducible and easy to apply, allowing HRCT comparisons among premature infants by the identification of patients with different risk factors for respiratory morbidity.

Toufen et al.\(^{(33)}\) evaluated patients with acute respiratory distress syndrome. The authors reported that, despite the marked severity of lung disease at admission, the patients in whom the acute respiratory distress syndrome was caused by infection with the swine-origin influenza A (H1N1) virus presented a late but substantial recovery over six months of follow-up.

De Paulis et al.\(^{(34)}\) compared isolated infection with respiratory syncytial virus (RSV) and co-infection with RSV and other viruses, in terms of severity. The authors concluded that viral co-infections do not seem to affect the prognosis of hospitalized infants with acute RSV infection.

**Oncology**

A number of recently published articles dealt with the field of oncology. We identified six such articles.

According to Ardengh et al.\(^{(35)}\) transesophageal ultrasound-guided fine needle aspiration is an alternative to surgical procedures. The authors stated that, in the vast majority of cases, the former can be used for the investigation of mediastinal lesions.

Miziara et al.\(^{(36)}\) evaluated the combination of standard CT scans and Tc-99m sestamibi single-photon emission CT scans for the nodal staging of patients with non-small cell lung cancer. The authors found that, although the combination showed high specificity, its sensitivity and accuracy were quite low.

Parra et al.\(^{(37)}\) studied the lungs of BALB/c mice after chemical carcinogenesis and found a direct link between low amounts of type V collagen and decreased cell apoptosis, which might favor neoplasia. The authors therefore suggested that strategies aimed at preventing decreased type V collagen synthesis or local responses that reduce apoptosis might have a significant impact on the control of lung cancer.

Pereira et al.\(^{(38)}\) studied urethane-induced lung tumors in Swiss mice. The authors found that even low levels of exposure to fine particulate matter increased the risk of developing such tumors.

Sardenberg et al.\(^{(39)}\) evaluated the treatment of patients with non-lung primary tumors. The authors concluded that pulmonary metastasectomy is a safe and potentially curative procedure for such patients, and that select patients can achieve long-term survival after lung resection.

Terra et al.\(^{(40)}\) studied the use of talc pleurodesis carried out entirely on an outpatient basis in patients with recurrent malignant pleural effusions and Karnofsky performance status < 70. The authors found that, in such cases, outpatient talc pleurodesis is a safe, efficacious procedure, with low complication rates, and reduces hospital admissions.

Zhang et al.\(^{(41)}\) found that tumor-associated macrophages in lung adenocarcinoma have an M2-polarized subtype and are associated with poor prognoses. The authors suggested that this results from accelerated lymphangiogenesis and lymph node metastasis.

**Exercise**

One somewhat popular topic among the articles evaluated was that of exercise. Four articles addressed the relationships among diseases, treatments, and exercise.

Gimenes et al.\(^{(42)}\) studied the oxygen uptake to work rate ratio in relation to various indicators of aerobic dysfunction during ramp incremental exercise in patients with mitochondrial myopathy and controls. The authors concluded that that ratio is a readily available, effort-independent index of aerobic dysfunction.

Mainenti et al.\(^{(43)}\) investigated the effects of levothyroxine on cardiopulmonary exercise reserve and recovery in patients with subclinical hypothyroidism. The authors found that levothyroxine improved exercise cardiopulmonary reserve but had no effect on cardiopulmonary recovery after exercise during the 6-month study period.

Castro et al.\(^{(44)}\) compared respiratory responses during progressive cardiopulmonary exercise tests performed on cycle or arm ergometers. Those authors found that, although not influencing the timing of breathing, the type of exercise
influences time-domain ventilatory variability in young, healthy individuals.

Myers et al. found that impaired cardiac output recovery kinetics can identify heart failure patients with greater disease severity, lower exercise capacity, and inefficient ventilation. Estimating cardiac output during recovery from exercise might provide additional insight into the cardiovascular status of patients with heart failure.

Allergy

Among the recently published articles evaluated, only three dealt with the topic of allergic diseases. Nevertheless, we found those articles quite interesting.

Boskabady et al. studied the effect of hydroethanolic extract of Nigella sativa in ovalbumin-sensitized guinea pigs. The authors found that the extract had a preventive effect on the tracheal responsiveness, as well as on the white blood cell count in the BAL fluid.

Gomieiro et al. found that, in elderly individuals with asthma, a respiratory exercise program increased muscle strength and was associated with a positive effect on health and quality of life. The authors concluded that such a program should be included in the therapeutic approach to those patients.

Guimarães et al. assessed pulmonary function and the prevalence of atopy in school-age children who had been very-low-birth-weight infants. The authors found that there were no significant differences between the children with and without bronchopulmonary dysplasia in terms of lung function parameters, nor was there any evidence of an association between atopy and bronchopulmonary dysplasia.

Epidemiology

Epidemiology continues to be the object of much research worldwide. Among the articles evaluated, we found three dealing with epidemiological issues.

Mamishi et al. determined the most common infectious causes of hospital admissions in select Iranian patients with primary antibody deficiencies. The authors found that respiratory tract infections were the most common cause of hospitalization among those patients.

Lamy et al. evaluated neonatal ICUs at public hospitals in the city of São Luís, Brazil. Those authors found that staff work overload increases the occurrence of intermediate adverse effects in newborns and suggested that work overload be taken into consideration when evaluating outcomes in such ICUs.

Marba et al. studied the treatment of very-low-birth-weight neonates over a period of 15 years. The authors found that the incidence of periventricular/intraventricular hemorrhage declined significantly over the study period.

Obstructive sleep apnea

Obstructive sleep apnea (OSA) has long been of interest to pulmonologists. Among the recently published articles evaluated, there were two dealing with that topic.

Neves et al. evaluated the effects of sildenafil on the autonomic nervous system in patients with severe OSA. The authors found evidence to suggest that, in addition to worsening sleep apnea, sildenafil has potentially immediate and negative cardiac effects in patients with severe OSA.

According to Romano et al., the determination of flow limitation (exhaled air volume in 0.2 s) by a negative expiratory pressure test during wakefulness might be a highly sensitive and reliable method of identifying OSA. When the test is positive, mild OSA can be presumed; when it is negative, moderate and severe OSA can be excluded.

COPD

The treatment of COPD constitutes a major challenge for pulmonologists. Here, we evaluated two articles on the topic of COPD.

Reis et al. found that patients with COPD present impaired sympathetic-vagal balance at rest. Those authors also found that autonomic control of HR is associated with inspiratory muscle weakness in COPD.

Silva et al. found that, in patients with severe COPD, respiratory alterations can be identified by increased respiratory system impedance, which is more evident in the expiratory phase. Their results seem to confirm the potential of within-breath analysis of respiratory impedance for the assessment of COPD-related respiratory alterations.
Trauma

Trauma can have disastrous effects on the respiratory system. Of the recently published articles evaluated, two dealt with those effects and their treatment.

Dong et al.\(^{(56)}\) reported that victims of the Sichuan earthquake who had sustained crush-related thoracic trauma exhibited life-threatening conditions, with a high incidence of bone fractures in the thorax. Bilateral involvement of the ribs was common, as were severe types of fractures, which were accompanied by non-rib fractures and injury to the lung parenchyma or pleura.

According to Sincos et al.\(^{(57)}\) endovascular treatment is a safe method for repairing blunt aortic trauma, with immediate and mid-term results that were comparable to those obtained with surgical repair. No complications caused by the stent graft were identified during the follow-up period (mean, 33 months).

Other

Among the recently published articles selected, there were some that dealt with topics other than those listed above. We evaluated six such articles.

Ranzani et al.\(^{(58)}\) evaluated a group of critically ill patients with systemic lupus erythematosus and a group of patients with other systemic rheumatic diseases. The authors found that the incidence of severe respiratory dysfunction at admission was lower in the former group, whereas the incidence of severe hematologic dysfunction was lower in the latter.

Barbalho-Moulim et al.\(^{(59)}\) studied a group of obese women undergoing open bariatric surgery. The authors showed that pre-operative inspiratory muscle training attenuates the impact that the trauma of bariatric surgery has on respiratory muscle strength without altering lung volumes or diaphragmatic excursion.

In a murine model of hemorrhagic shock, Costantini et al.\(^{(60)}\) evaluated the use of hypertonic saline, which has hemodynamic and immune benefits, in combination with the phosphodiesterase inhibitor pentoxifylline, which has anti-inflammatory effects, as a hemorrhagic shock resuscitation strategy. The authors found that the use of that combination resulted in less lung injury than did the use of Ringer’s lactate.

Dogan et al.\(^{(61)}\) evaluated rats exposed to smoke (tobacco smoke and biomass smoke). The authors reported that tobacco smoke caused severe damage to the respiratory histopathology, particularly when there was concomitant exposure to biomass smoke.

Otsuki et al.\(^{(62)}\) compared two preparations of the anesthetic sevoflurane (with water and with propylene glycol) in pigs. The authors found the two preparations to be equal regarding their hemodynamic and pulmonary effects.

Silva et al. \(^{(63)}\) tested the effects that mycophenolate sodium, one of the most commonly used immunosuppressive drugs in lung transplantation, has on mucociliary clearance in rats. The authors found that the drug had no effect on transportability but significantly reduced mucociliary transport velocity in situ.

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About the authors

Ariane Maris Gomes
Editorial Assistant. Clinics, University of São Paulo School of Medicine Hospital das Clínicas, São Paulo, Brazil.

Daniela Aquemi Higa
Editorial Assistant. Clinics, University of São Paulo School of Medicine Hospital das Clínicas, São Paulo, Brazil.