Palliative Care Improves Outcomes in Patients With Lung Cancer

Early Palliative Care for Patients With Metastatic Non–Small-Cell Lung Cancer.

Temel JS, Greer JA, et al:

N Engl J Med 2010; 363 (August 19): 733-742

In patients with metastatic lung cancer, palliative care lengthens survival and improves quality of life.

Background: Palliative care focuses on management of symptoms, psychosocial support, and assistance with decision making. It is likely, therefore, that palliative care could improve the quality of life of patients with lung cancer.
Objective: To determine if palliative care strategies offered earlier in the illness would improve the quality of life of lung cancer patients.
Methods: Patients with metastatic non–small-cell lung cancer (NSCLC) were randomly assigned to receive standard oncologic care or standard oncologic care plus palliative care. Patients were assessed at 12 weeks for quality of life using the Functional Assessment of Cancer Therapy–Lung (FACT-L) scale and the Hospital Anxiety and Depression Scale. The primary outcome evaluated for quality of life during this 12-week evaluation was the level of care the patient received at the end of life.
Results: 151 patients were enrolled in the study. The average number of visits was 4 in the palliative care group, with a range of 0 to 8 visits. Palliative care patients had significantly higher scores than standard care patients on the total FACT-L scale, the functional assessment score, and the LCS score. Group assignment significantly predicted the score at 12 weeks. In addition, the number of patients who suffered from depression at 12 weeks was significantly smaller in patients who received palliative care. Seventy percent of the patients died before publication of this paper. Fifty-four percent of patients in the standard care group received aggressive end-of-life care compared to only 33% of patients in the palliative care group. This was statistically significant. Interestingly, despite a more aggressive care at the end of life, patients in the oncological group actually had a shorter survival period than the patients in the palliative care group.
Conclusions: In patients with metastatic NSCLC, early palliative care improves quality of life and mood. There also appears to be less aggressive end-of-life care performed, but survival is not adversely affected.
Reviewer's Comments: The data strongly suggest that palliative care should be considered as an early intervention in all patients with metastatic NSCLC. The program provides support on improving quality of life and reducing the likelihood of depression. While it is not obvious why palliative care might prolong life, this study suggests that it does in this patient population. One of the reasons that physicians often do not use palliative care, early or late, is that they believe it is basically throwing in the towel. Actually, the data suggest just the opposite. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Palliative Care, Lung Cancer, Standard Care, End of Life

Print Tag: Refer to original journal article

Taming Tonsils -- Pharmacologic Breakthrough for Children With OSA

Transcriptomic Analysis Identifies Phosphatases as Novel Targets for Adenotonsillar Hypertrophy of Pediatric Obstructive Sleep Apnea.

Khalyfa A, Gharib SA, et al:

Am J Respir Crit Care Med 2010; 181 (May 15): 1114-1120

In the future, drugs will likely be targeted against tonsillar hypertrophy to treat children with obstructive sleep apnea, perhaps circumventing surgery.

Background/Objective: Obstructive sleep apnea (OSA) is common in children, and enlargement of the tonsils and adenoids are key in the pathophysiology. Why adenotonsillar tissues proliferate and hypertrophy in these children is not clear, and curative surgery carries a risk. The authors postulated that computer analysis of gene expression and tonsils from children with OSA and children without OSA with recurrent tonsillitis might identify biochemical pathways associated with tonsillar hypertrophy in children with OSA.
Methods: Tonsils from children with either polysomnographically documented OSA or recurrent tonsillitis underwent whole genome microarray and functional enrichment analysis. Significant score ranking was based on gene networks and enabled confirmation of a candidate list of adenotonsillar-proliferative genes.
Results: Phosphoserine phosphatase was one of the candidates for tonsil-proliferative genes. In vitro studies using a mixed tonsil cell culture system demonstrated that the phosphoserine phosphatase gene was over-expressed in the tonsils of individuals with OSA, and that pharmacological inhibition of phosphoserine phosphatase led to increased apoptosis and marked reductions in T- and B-lymphocyte proliferation.
Conclusions: A restricted set of candidate genes related to the increased proliferative properties of adenotonsillar tissues in children with OSA was demonstrated by this systems-biology approach. Functional studies confirm a new role for protein phosphatases in adenotonsillar hypertrophy. This discovery suggests a strategy for identification of new nonsurgical therapeutic agents in pediatric OSA.
Reviewer's Comments: This study is an example of basic science research within medical universities (in this case, the University of Chicago, the University of Washington, and the University of Louisville) that often leads directly to pharmaceutical company drug discovery. Designer molecules targeted toward inhibition of phosphoserine phosphatase may reasonably be expected in the near future. (Reviewer-A. Gray Bullard, MD).

Keywords: Obstructive Sleep Apnea, Adenotonsillar Hypertrophy, Phosphatases

Print Tag: Refer to original journal article

Recruitment Maneuvers Useful in Hypoxic Patients With ARDS

Therapeutic Strategies for Severe Acute Lung Injury (Card 1 of 2).

Diaz JV, Brower R, et al:

Crit Care Med 2010; 30 (August): 1644-1650

Using the prone position technique in patients with severe acute respiratory distress syndrome who have life-threatening hypoxia with elevated plateau pressures is recommended.

Objective: To identify the current strategies for treating patients with acute respiratory distress syndrome (ARDS).
Background: Despite the fact that ARDS has been a known entity since the mid-1960s, there is a lack of consensus regarding the definition. However, all clinicians regard hypoxemia as the cardinal feature. Most people currently use the distinction of the PO2/FiO2 ratio as the clinical parameter identification, although a large number of physicians use the lung injury score as a substitute. **Discussion:** The authors suggest that all patients should be investigated for sepsis, diffuse alveolar hemorrhage, and heart failure when the cause of ARDS is not obvious. The initial intervention should be a lung-protective strategy. Positive end-expiratory pressure (PEEP) should be set at moderate levels to achieve an appropriate level of oxygenation. VT as low as 4 mL/kg may be necessary to reach the goal plateau pressure of <30. This may require the use of high respiratory rates and may generate hypercapnia. Recruitment maneuvers have the potential for aerating collapsed alveoli. The risks are those associated with high airway pressure. Several studies have demonstrated that, although oxygenation may improve, many patients will experience hypotension, arrhythmias, desaturation, and barotrauma. If used, recruitment maneuvers should be used early in the management of patients with severe ARDS. They should not be used in patients who are in shock, have pneumothorax, or have focal disease. Patients should be prepared with adequate volume resuscitation and sedation. ***Prone Positioning:*** Studies have demonstrated that this maneuver may promote recruitment of dependent areas of the lung by relieving external compressing forces. The risks of the procedure include injury to the skin and soft tissue and those associated with turning the patient. There has never been any survival benefit demonstrated for this technique. However, randomized trials did report some benefit in mortality.
Conclusions: The authors recommend using the prone position technique in patients with severe ARDS who have life-threatening hypoxia with elevated plateau pressures. Patients should be in the prone position for at least 20 hours per day.
Reviewer's Comments: The authors suggest that identification of patients should proceed first by finding a lung injury score of ≥3 and then the appropriate level of hypoxia. Several studies have demonstrated that although oxygenation may improve with recruitment maneuvers, many patients experience hypotension, arrhythmias, desaturation, and barotrauma. The authors recommend using prone ventilation in patients with severe ARDS who have life-threatening hypoxia with elevated plateau pressures. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Treatment Strategies, ARDS

Print Tag: Refer to original journal article

Treating Acute Respiratory Distress Syndrome

Therapeutic Strategies for Severe Acute Lung Injury (Card 2 of 2).

Diaz JV, Brower R, et al:

Crit Care Med 2010; 30 (August): 1644-1650

Two relatively small studies have demonstrated improvement in oxygenation and lung injury score but no survival benefit with steroids.

Objective: To identify the current strategies for treating patients with acute respiratory distress syndrome (ARDS). **Discussion:** Numerous studies have demonstrated that an improvement in oxygenation, but none of the studies have been powered to demonstrate a survival benefit with high-frequency oscillatory ventilation. The purpose of high-frequency ventilation is to improve oxygenation while decreasing the mean airway pressure and creating recruitment. The risks associated with these techniques are not all that different from mechanical ventilation and include hemodynamic compromise, barotrauma, the need for sedation, and, more specifically, the high-frequency ventilation than conventional ventilation is the potential need for paralysis and drying of the airway mucosa. As mentioned above, oxygenation appears to be improved and will be more successful if instituted earlier. Also, as mentioned above, 2 clinical trials attempted to prove a survival benefit but were unable to do so even though there was a trend toward improved survival in the high-frequency group. Inhaled nitric oxide has also been around for several decades. The mechanism of action is vasodilatation of ventilated areas providing improvement in ventilation perfusion ratios. Several randomized, controlled clinical trials have been unable to demonstrate a survival benefit with nitric oxide. Approximately 60% of patients demonstrate an improvement in oxygenation. The dose response to nitric oxide is very unpredictable. Interestingly, a meta-analysis showed a trend toward increased mortality with nitric oxide, but this did not reach statistical significance. The authors, therefore, recommend that nitric oxide be considered only in patients with life-threatening hypoxia who have failed previous interventions. The previous use of large-dose steroids has demonstrated a risk of adverse effects, including myopathies and infection. Clinical trials have failed to identify a survival benefit for patients with the ARDS who were treated with steroids. Two relatively small studies demonstrated improvement in oxygenation and lung injury score but no survival benefit. If the steroids are started, a 3-day trial of therapy is indicated. If there is no improvement, then the steroids should be stopped. Permissive hypercapnia is a side effect of many ventilator strategies. Bicarbonate drips for respiratory acidosis then ensues if demonstrated to result in worsening of the acidosis not improvement. A non-bicarbonate buffer called tris hydroxymethyl aminomethane has been suggested to replace bicarbonate because it does not result in increased CO_2 production, but this cannot be used in patients with renal failure.
Reviewer's Comments: The authors recommend that, if you are going to use high-frequency oscillatory ventilation, you should do so early in the course of a patient with ARDS, but do not use it in patients with shock, severe airway obstruction, or intracranial hemorrhage. Two relatively small studies demonstrated improvement in oxygenation and lung injury score but no survival benefit with steroids. Permissive hypercapnia may be treated with a non-bicarbonate buffer. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Severe Acute Lung Injury; Treatment Strategies

Print Tag: Refer to original journal article

NPPV Improves Mortality in Obesity-Hypoventilation Syndrome

Long-Term Outcome of Noninvasive Positive Pressure Ventilation for Obesity Hypoventilation Syndrome.

Priou P, Hamel J-F, et al:

Chest 2010; 138 (July): 84-90

Noninvasive positive pressure ventilation therapy improves mortality and carbon dioxide levels in patients with obesity-hypoventilation syndrome.

Background/Objective: To determine whether long-term survival, treatment compliance, and prognostic factors are improved in patients with obesity-hypoventilation syndrome (OHS) regardless of whether noninvasive positive pressure ventilation (NPPV) is begun in the acute setting or under stable conditions.
Design: Retrospective analysis.
Participants/Methods: 130 patients with OHS, including 56 women, began NPPV either under stable conditions (n=92) or during ICU management of acute hypercapnic respiratory failure (n=38).
Results: Improvements in arterial blood gases (pCO_2) and the Epworth Sleepiness Scale score were both significant after 6 months of NPPV. Kaplan-Meier survival probabilities at 1, 2, 3, and 5 years were 97.5%, 93%, 88.3%, and 77.3%, respectively. Mortality was lower than in a previous study of patients with untreated OHS. The probability of continuing NPPV at 3 years was 80% with >7 hours of average daily use. Women were less likely to be adherent to therapy long term. No significant differences in arterial blood gas parameters and Epworth Sleepiness Scale scores were seen between the acute and stable groups after 6 months of therapy. The acute and stable groups did not differ in regard to long-term survival and treatment adherence. Supplemental oxygen therapy was the only independent predictor of mortality among those studied.
Conclusions: Long-term NPPV is supported as a well-tolerated, effective treatment of OHS, whether initiated in the acute or chronic setting.
Reviewer's Comments: Obesity-hypoventilation syndrome is becoming the most common indication for NPPV, according to the authors. The majority (90%) of patients with OHS also have obstructive sleep apnea. It is reassuring to know that, regardless of whether this therapy is begun acutely or in the stable chronic setting, the important end points of signs (hypercapnia), symptoms (sleepiness), and mortality are all improved with therapy. It is also interesting that patients with OHS have been shown to be more compliant with NPPV than with continuous positive airway pressure (CPAP). Many patients we routinely start on CPAP for obstructive sleep apnea have mild disease on polysomnography with mild symptoms; this is usually not the case with OHS and may explain the superior adherence to therapy. The retrospective design of the study (eg, absence of a control group) is a limitation, however, it is understandable. On the other hand, the authors were diligent to include only patients with pCO_2 values >45 and a body mass index ≥30 kg/m2, which is a confirmatory diagnostic set not provided in prior studies. (Reviewer-A. Gray Bullard, MD).

Keywords: Obesity-Hypoventilation Syndrome, Chronic Respiratory Acidosis

Print Tag: Refer to original journal article

Combination Tx Okay for Very Sick But Not Low-Risk Patients

A Survival Benefit of Combination Antibiotic Therapy for Serious Infections Associated With Sepsis and Septic Shock Is Contingent Only on the Risk of Death: A Meta-Analytic/Meta-Regression Study.

Kumar A, Safdar N, et al:

Crit Care Med 2010; 38 (August): 1651-1664

Combination antibiotic therapy improves survival and clinical effectiveness in patients who are at high risk for death or who are in show, but may be harmful for patients who are low risk.

Background: Antibiotic stewardship has become a mantra across the country. Bacterial resistance is on the rise, and there are very few new antibiotics on the horizon. One of the strategies that have been employed relies on escalation/de-escalation therapy. In this strategy, broad spectrum antibiotics are initially started, and then when the organism is identified, they are reduced. Studies have shown that the latter event does not always happen, leaving the patient on multiple different antibiotics. One of the questions that arise is whether there are some predictors that might be used to determine ahead of time who might benefit from a combination of antibiotics.
Objective: To determine whether, in fact, there is a survival benefit for patients given combination antimicrobial therapy.
Design: Meta-analysis using data from Medline, Embase, and other databases.
Methods: Studies were selected if they were randomized controlled trials of patients with serious bacterial infections. Two reviewers reviewed the papers and extracted the necessary data.
Results: 50 studies met the entrance criteria. The pooled mortality odds did not show a benefit to combination therapy over monotherapy. The odds ratio was 0.856, with confidence intervals >1.0 Stratification by mortality risk at presentation did, however, demonstrate a benefit for the most severely ill patients. Here the odds ratio of death with combination therapy was 0.51. Interestingly, in the patients who were the least ill, there was an increased risk of death for those who received the combination therapy. After a multiple regression analysis was performed, the increased risk of death or benefit was the result of the risk stratification alone.
Conclusions: The authors conclude that combination therapy improves survival and clinical effectiveness in patients who are at high risk for death and who are in shock. They also note that such therapy might be harmful for patients who are low risk.
Reviewer's Comments: This is a very interesting analysis with far reaching implications. It appears that combination therapy is the way to go in severely ill patients. This makes sense since there are numerous studies showing that patients who are given the wrong antibiotics initially have a poorer prognosis. What this study also appears to show is that over medicating patients who are not at risk for poor outcomes is detrimental. Therefore, careful assessment at the time of admission is essential to titrating therapy according to each patients needs. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Sepsis, Septic Shock, Infection, Combination Antibiotic Therapy

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Combination Therapy May Improve Symptoms in Sleep Apnea Patients

Pharmacological Treatment of Obstructive Sleep Apnea With a Combination of Pseudoephedrine and Domperidone.

Larrain A, Kapur VK, et al:

J Clin Sleep Med 2010; 6 (April 15): 117-123

The combination of domperidone and pseudoephedrine improves self-reported snoring and sleepiness in patients with obstructive sleep apnea.

Objective: To determine the effect of domperidone-pseudoephedrine combination therapy on nocturnal oximetry measurements and daytime sleepiness in patients with obstructive sleep apnea.
Methods: Patients with severe snoring and apneic episodes underwent a baseline clinical history, overnight nocturnal oximetry at home, and administration of the Epworth Sleepiness Scale. Following this, the patients were started on weight-adjusted doses of pseudoephedrine and domperidone. Follow-up overnight oximetry was obtained intermittently and at the final visit; an Epworth score and repeat clinical history were obtained on the final visit.
Results: The medications were well tolerated by all of the patients. Seventeen of the 23 patients reported complete resolution of snoring and apnea episodes (P <0.001). Three patients continued to have mild snoring but no periods of apnea, and 4 patients continued to have snoring and apnea. Significant improvement in mean oxygen saturation (P =0.008), percent time with oxygen saturation <90% (P =0.003), and 4% oxygen desaturation index (P <0.0001) was noted. No adverse effects of treatment were reported.
Conclusions: Domperidone-pseudoephedrine combination therapy improved self-reported sleepiness and snoring, and may have improved apneas and sleep-related oxygen desaturations in patients with obstructive sleep apnea. This drug combination should be studied further.
Reviewer's Comments: The great unknown in this study is whether or not the patients who received pseudoephedrine-domperidone slept as much on subsequent nights as they did before treatment. Sleeping less could explain the improvement in sleep oximetry parameters, but we cannot know this because polysomnography was not a tool in the study. It would also be interesting to know whether a control group without obstructive sleep apnea, given the same combination therapy, would also report improvement in sleepiness. Further studies are justified, because even though this drug therapy may never become primary management for obstructive sleep apnea, it may yet be proven to be a helpful adjunct therapy in selected patients unable to comply with continuous positive airway pressure therapy for obstructive sleep apnea. (Reviewer-A. Gray Bullard, MD).

Keywords: Obstructive Sleep Apnea, Pseudoephedrine, Domperidone

Print Tag: Refer to original journal article

Compression-Only CPR May Be Best for Out-of-Hospital Cardiac Arrests

Compression-Only CPR or Standard CPR in Out-of-Hospital Cardiac Arrest.

Svensson L, Bohm K, et al:

N Engl J Med 2010; 363 (July 29): 434-442

There appears to be no difference in 30-day survival among those who receive compression-only cardiopulmonary resuscitation (CPR) versus standard CPR during suspected out-of-hospital cardiac arrest.

Background: In an emergency situation, bystanders often call in regarding a possible cardiac arrest. It has become the practice in most cities to provide the bystander with cardiopulmonary resuscitation (CPR) information over the telephone, while emergency medical services (EMS) personnel are being dispatched. A previous study suggested that cardiac compression alone was superior to cardiac compression plus rescue breathing in this circumstance. Unfortunately, the study lacked sufficient power to identify whether or not survival was improved.
Objective/Design: To perform a randomized, controlled evaluation of these 2 forms of rescue therapy with a sufficient power to analyze survival.
Participants/Methods: Participants included patients with witnessed, suspected, out-of-hospital cardiac arrest. The patients were randomly assigned to either compression-only CPR or standard CPR (compression plus rescue breathing). The primary end point for the study was 30-day survival. The study took place in Sweden, a country of approximately 9 million people, where there are approximately 10,000 emergency calls daily. The data for the study were collected between February 2005 and January 2009. Almost 1300 patients were evaluated; 620 of them received compression-only CPR and 656 were assigned to standard CPR.
Results: The 30-day survival rate was similar in both groups at 8.7% for those receiving compression-only CPR and 7.0% for those receiving standard CPR; this difference did not reach statistical significance. The average age for this patient population was 67 years. The vast majority of cardiac arrests (76%) occurred in the home, and 9% occurred in a public place. Only 23% of the patients received EMS response within 5 minutes. An additional 26% received EMS response in 8 minutes. Ventricular fibrillation or tachycardia was the presenting rhythm in approximately one-third of the patients, while >50% had asystole rhythm.
Conclusions: The authors conclude that in this prospective randomized study, there was no difference in 30-day survival whether the emergency medical dispatcher instructed bystanders on using compression-only CPR or standard CPR.
Reviewer's Comments: The study supports the previous study and another study that was presented in this journal with respect to survival rate and out-of-hospital cardiac arrest when CPR is performed by lay persons. All the studies have demonstrated that there does not appear to be any added benefit when rescue breathing is added to compressions for CPR. Therefore, since rescue breathing does complicate the instruction and may actually reduce the number of cardiac compressions that the patients receive, it is probably a reasonable strategy to do compression-only CPR. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Cardiac Arrest, Out-of-Hospital, Compression CPR, Rescue Breathing

Print Tag: Refer to original journal article

Pregabalin Has Therapeutic Effects in Restless Legs Syndrome

Treatment of Restless Legs Syndrome With Pregabalin: A Double-Blind, Placebo-Controlled Study.

Garcia-Borreguero D, Larrosa O, et al:

Neurology 2010; 74 (June 8): 1897-1904

Pregabalin therapy significantly improves the International Restless Legs Scale score compared to placebo.

Objective: To measure the efficacy, dose requirement, and tolerability of pregabalin in patients with restless legs syndrome (RLS).
Design: Double-blind, placebo-controlled, flexible-dose, parallel-group trial.
Participants: The study included women and men between 18 and 80 years of age with idiopathic RLS. RLS had interfered with the patients' onset of sleep and sleep maintenance ≥4 times per week for at least 6 months.
Methods: 98 RLS patients underwent a 2-week single-blind placebo period; 58 of these patients were randomized (1:1 ratio) to receive either placebo (n=28) or pregabalin (n=30) for 12 weeks under a flexible-dose schedule. Changes in the International Restless Legs Scale (IRLS), the Clinical Global Impression (CGI) scale, RLS-6 scale, Medical Outcomes Study (MOS) scale between baseline and week 12, as well as periodic limb movements and sleep architecture were end points.
Results: The treatment group had greater improvement in the IRLS score than the placebo group (63% vs 38%; P <0.05). At the end of treatment, the mean effective daily dose of pregabalin was 322.5 mg/day, but therapeutic effects were seen beginning at a mean dose of 139 mg/day. Improvements on the CGI, RLS-6, MOS sleep scale were all significantly improved compared to placebo (P <0.01). Marked improvement in sleep architecture, with an increase in slow-wave sleep and decreases in wakefulness after sleep onset and stages 1 and 2 was also observed. Pregabalin was well tolerated generally, with only mild adverse events (unsteadiness, daytime sleepiness, and headache).
Conclusions: Pregabalin has significant therapeutic effects on both sensory and motor symptoms of RLS, with improvement in sleep architecture and periodic limb movements. Adverse events include unsteadiness and sleepiness. Symptoms should be monitored carefully, especially in workers taking the medication in the afternoon.
Reviewer's Comments: Pulmonologists see RLS patients frequently in their sleep-disorder clinics as part of their work in caring for patients with obstructive sleep apnea who may have movement disorders (eg, periodic limb movements of sleep). The importance of an additional class of effective medications for RLS is significant, as most of the currently used effective medications are dopamine agonists, with all of the common side-effects of dopamine agonists. (Reviewer-A. Gray Bullard, MD).

Keywords: Restless Legs Syndrome, Treatment, Pregabalin

Print Tag: Refer to original journal article

Does Sleep-Disordered Breathing in REM vs Non-REM Make a Difference?

Sleepiness, Quality of Life, and Sleep Maintenance in REM Versus Non-REM Sleep-Disordered Breathing.

Chami HA, Baldwin CM, et al:

Am J Respir Crit Care Med 2010; 181 (May 1): 997-1002

REM sleep-disordered breathing without non-REM sleep-disordered breathing is not associated with sleepiness, impaired quality of life, or difficulty maintaining sleep.

Objective: To evaluate the relationship between sleep-disordered breathing during REM sleep with excessive daytime sleepiness, health-related quality of life, and difficulty maintaining sleep and to compare these findings to patients with sleep-disordered breathing during non-REM sleep.
Methods: A cross sectional analysis of 5649 Sleep Heart Health Study subjects was performed using polysomnography. The mean age of participants was 62.5 years, with 63% women and 23% minorities. Sleepiness, sleep maintenance, and quality of life were quantified using the Epworth Sleepiness Scale, Sleep Heart Health Study Sleep Habit Questionnaire, and the Medical Outcomes Study 36-item short form (SF-36).
Results: REM apnea-hypopnea index (REM-AHI) was not associated with the Epworth Sleepiness Scale scores or the SF-36 after adjusting for body mass index, non–REM-AHI, and demographics. REM-AHI was not associated with frequent awakening. Non–REM-AHI was associated with higher sleepiness scores on the Epworth Sleepiness Scale as well as the physical and mental component scores of the SF-36, adjusting for demographics, body mass index, and REM-AHI.
Conclusions: REM-predominant sleep-disordered breathing is not independently associated with daytime sleepiness, quality of life, or self-reported sleep disruption in a community-based sample of middle-aged and older adults.
Reviewer's Comments: When a polysomnographer reads a study with characteristic sawtooth desaturations during REM sleep, it seems reasonable to assume that this is the pathology resulting in daytime sleepiness. However, this study strongly suggests that this phenomenon has nothing to do with sleepiness, but rather sleepiness is related to the sleep-disordered breathing events occurring in non-REM sleep. This information translates to an injunction to a physician caring for a sleepy patient with obstructive sleep apnea who has sleep-disordered events only during REM sleep on the polysomnogram: treat the sleep apnea, but look for another cause of daytime sleepiness. (Reviewer-A. Gray Bullard, MD).

Keywords: Obstructive Sleep Apnea, REM, Sleepiness, Quality of Life

Print Tag: Refer to original journal article

Beta-Blocker Selectivity Affects FEV1 Afterload in Heart Failure Patients With COPD

Differences Between Beta-Blockers in Patients With Chronic Heart Failure and Chronic Obstructive Pulmonary Disease.

Jabbour A, Macdonald PS, et al:

J Am Coll Cardiol 2010; 55 (April 27): 1780-1787

In this study, FEV_1 was higher with beta-1 selective compared to nonselective beta-blockade, while NT-proBNP was lower with carvedilol therapy.

Background: Beta-blockers improve morbidity and mortality in heart failure. Nevertheless, this therapy is underutilized due to side effect concerns, especially concerns about lung function in the 1 out of 4 heart failure patients with chronic obstructive pulmonary disease (COPD).
Objective: To measure the cardiopulmonary response to nonselective and beta-1 selective beta-blockers in heart failure patients with COPD.
Methods: Prospective randomized open-label triple crossover trial in 51 stable heart failure patients, 35 of whom had stable COPD. All subjects were on standard baseline therapies, including a beta-blocker. The beta-blockers evaluated included equivalent doses of the nonselective beta-blocker carvedilol, and the beta-1 specific beta-blockers metoprolol and bisoprolol. Patients were evaluated while on their baseline therapy then randomized to a second and third beta-blocker each for 6-week intervals. Patients were then switched back to their original beta-blocker for 4 weeks. Assessments on each beta-blocker included the primary outcome, post-bronchodilator forced expiratory volume in 1 second (FEV_1), changes in the bronchodilator response, 6-minute walk distance, arterial pulse wave velocity, echocardiography for cardiac dimensions and ejection fraction, and N-terminal pro-hormone brain natriuretic peptide (NT-proBNP).
Results: FEV_1 was significantly higher among patients receiving the beta-1 specific beta-blockers metoprolol and bisoprolol compared to the nonspecific beta-blocker carvedilol. Forced vital capacity and bronchodilator responsiveness were not different among the 3 treatments. Cardiovascular responses also differed by treatment. Heart rate was lower with bisoprolol compared to the other 2 agents, but blood pressure was similar with all 3 treatments. Central augmented pressure by pulse wave velocity, a measure of afterload, was lowest with carvedilol. Echocardiographic cardiac dimensions and ejection fraction as well as 6-minute walk distance was similar with all 3 treatments. NT-proBNP was significantly lower during carvedilol therapy compared to either metoprolol or bisoprolol.
Conclusions: Cardiopulmonary responses varied by beta-1 selectivity. FEV_1 was higher with beta-1 selective compared to nonselective beta-blockade, while NT-proBNP was lower with carvedilol therapy. A major limitation of the study was that all subjects were tolerating baseline beta-blockers and the majority were on carvedilol, introducing selection bias.
Reviewer's Comments: This small study shows different cardiopulmonary responses to beta-1 selective and nonselective beta-blockers. Practitioners need to weight the potential negative pulmonary effects versus potential positive cardiovascular effects in initiating a nonselective beta-blocker in the stable heart failure patient with COPD. Although NT-proBNP differed by beta-blocker type, I would not have anticipated the other secondary end points of ejection fraction and 6-minute walk distance to differ with only 6 weeks of each agent. Most important is the fact that clinically these patients with moderate COPD did well on beta-blocker therapy. This therapy, regardless of type, should be more frequently utilized in this patient group. (Reviewer-Steven P. Schulman, MD).

Keywords: Left Ventricular Dysfunction, Chronic Obstructive Pulmonary Disease, Beta-Blockers

Print Tag: Refer to original journal article

Sildenafil Not Recommended in ARDS Patients

Sildenafil Attenuates Pulmonary Arterial Pressure But Does Not Improve Oxygenation During ARDS.

Cornet AD, Hofstra JJ, et al:

Intensive Care Med 2010; 36 (May): 758-764

Oral sildenafil improves pulmonary hypertension associated with ARDS, but at the expense of both worsening shock and oxygenation.

Background: Acute respiratory distress syndrome (ARDS) is characterized by noncardiogenic pulmonary edema and hypoxia. However, pulmonary hypertension is also a prominent feature and contributes to mortality. Treatments with pulmonary vasodilators, such as nitric oxide or epoprostenol, have improved pulmonary arterial pressures and oxygenation.
Objective: To determine whether oral sildenafil benefits patients with ARDS.
Design: Multicenter open-label study.
Participants: 10 adult patients in mixed medical/surgical ICUs with PaO_2/FiO_2 <200, acute onset of bilateral infiltrates, absence of hydrostatic pulmonary edema, and a risk factor for ARDS.
Methods: A pulmonary artery catheter existed or was placed in all patients. One dose of oral sildenafil (50 mg) was given via gastric tube. Arterial blood for PaO_2, pulmonary artery catheter, and systemic arterial pressure measurements were taken every 30 minutes for 4 hours and again at 6 hours. Shunt fraction was calculated at these same times.
Results: Sepsis was the cause of ARDS in 4 patients and pneumonia in 2, with 7 patients on vasopressors. Average baseline PaO_2/FiO_2 ratio was 144 on 10 cm H_2O of positive end-expiratory pressure (PEEP). Sildenafil decreased mean pulmonary artery pressure from 25 to 22 mm Hg at 30 minutes and the effect persisted to 180 minutes. Similarly, the pulmonary artery occlusion pressure decreased from 16.0 to 12.5 mm Hg over the same time. Unfortunately, sildenafil also decreased systemic mean arterial pressure from an average of 81 to 75 mm Hg at 30 minutes and pressures remained below baseline levels for 3.5 hours. Four of 7 pressor-dependent patients required increased dosages to maintain mean arterial pressure >65 mm Hg. Sildenafil substantially decreased systemic and pulmonary vascular resistance indices without altering cardiac index. Sildenafil also worsened oxygenation, decreasing PaO_2 from 87 at baseline to 70 at 30 minutes. Oxygenation did not return to baseline until 3.5 hours. Levels of PEEP and FiO_2 did not change but PaO_2/FiO_2 ratio decreased from 144 to 115. Simultaneously with decrement of PaO_2, shunt fraction increased from 24% to 31% at 30 minutes and did not return to baseline until 2 hours.
Conclusions: Oral sildenafil improved pulmonary hypertension associated with ARDS, but at the expense of both worsening shock and oxygenation.
Reviewer's Comments: Pulmonary vasodilators are used as rescue therapies for hypoxemia in ARDS, although delivery has been via inhalation with the idea that the drug would only vasodilate ventilated parts of the lung and thereby improve V/Q matching. This study used oral sildenafil, which given its bioavailability should have similar pharmacokinetics to the recently approved IV formulation. Although sildenafil did improve pulmonary hemodynamics, it did so at the expense of both systemic blood pressure and oxygenation. This is almost assuredly from generalized systemic vasodilation and pulmonary vasodilation of areas of the lung with poor V/Q matching. Given these data, sildenafil cannot be recommended in patients with ARDS either routinely or for refractory hypoxemia. (Reviewer-Todd W. Rice, MD, MSc).

Keywords: Sildenafil, Pulmonary Hypertension

Print Tag: Refer to original journal article

Delayed Tracheostomy May Ward Off Risky, Unnecessary Steps

Early vs Late Tracheotomy for Prevention of Pneumonia in Mechanically Ventilated Adult ICU Patients: A Randomized Controlled Trial.

Terragni PP, Antonelli M, et al:

JAMA 2010; 303 (April 21): 1483-1489

Early tracheostomy offers little benefit in respiratory failure and may subject patients to unnecessary procedures and risks.

Background: Tracheostomy is typically reserved for patients who cannot be liberated from ventilator support. Most patients undergoing tracheostomy have, therefore, already spent weeks ventilated through an endotracheal tube, but recent studies have suggested value in earlier placement. These studies, however, have suffered from vague criteria for predicting the risk for chronic ventilator dependence.
Objective: To compare early versus delayed tracheostomy in a patient population precisely defined to be at risk for prolonged respiratory failure.
Design: Randomized trial across 12 Italian ICUs.
Participants: 600 patients were enrolled; after 48 hours of ventilation, 419 patients at high risk for prolonged ventilation (without concurrent pulmonary infection or moribund state) were randomized to early versus late tracheostomy.
Methods: High risk for prolonged ventilation was defined at 48 hours by significant hypoxemia (Pao_2 <60.0 mm Hg at Fio_2 >0.5 with PEEP >8.0 cm H_2O), persistence of underlying pathology that prompted intubation, and a Sequential Organ Failure Assessment score >5. These patients were randomized to tracheostomy at 6 to 8 days or 13 to 15 days after intubation, provided that the clinical state did not improve (oxygenation, improvement in underlying pathology), the patient had not become moribund, and there was no coagulation contraindication to surgery. Bedside tracheostomies were performed; intraoperative and postoperative complications were noted. Primary outcome was 28-day incidence of ventilator-associated pneumonia (VAP; defined by standardized criteria); secondary outcomes included mortality and hospital length of stay.
Results: Of 209 patients randomized to early (median, 7 days) tracheostomy, 26% did not ultimately receive a tracheostomy due to either recovery (weaning) or futility (moribund state) during that 7-day period. Of 210 patients randomized to late (median, 14 days) tracheostomy, 40% avoided tracheostomy due to recovery or futility during the 14-day waiting period. There was no difference in VAP rate, survival, or hospital stay between groups. Ventilator-free days were increased with early tracheostomy. There was a 39% risk of tracheostomy complications, typically minor.
Conclusions: Tracheostomy should be delayed for >14 days after intubation, avoiding earlier unnecessary (and potential risky) procedures.
Reviewer's Comments: This is a large and very well-done study that explicitly defines patients at risk for chronic respiratory failure. Given the absence of clinically relevant benefits of early tracheostomy and the high procedural complication rate, avoiding unnecessary tracheostomies is an important goal. Indeed, waiting 7 days allowed 26% of patients to declare themselves as not needing a tracheostomy, due to either recovery or futility. Waiting another 7 days allowed an additional 14% to avoid an unnecessary intervention. This supports the authors' contention that tracheostomy placement should be delayed for >14 days after intubation. It also underscores that it remains difficult to predict the duration of mechanical ventilation in individuals. (Reviewer-Eric P. Schmidt, MD).

Keywords: Tracheostomy, Chronic Respiratory Failure, Acute Respiratory Failure

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Pipe, Cigar Smokers at Risk for COPD

The Association of Pipe and Cigar Use With Cotinine Levels, Lung Function, and Airflow Obstruction: A Cross-Sectional Study.

Rodriguez J, Jiang R, et al:

Ann Intern Med 2010; 152 (February 16): 201-210

Pipe and cigar use increases cotinine levels and is associated with decreased lung function and increased odds of airflow obstruction.

Background: The potential harms of pipe and cigar smoking have not been well characterized.
Objective: To determine whether pipe and cigar smoking results in biological absorption of tobacco smoke, decreases lung function, and increases odds of airflow obstruction.
Design: Cross-sectional study.
Participants/Methods: Participants were a population-based sample of 3258 adults, aged 48 to 90 years, enrolled in the Multi-Ethnic Study of Atherosclerosis. Study measures included urine testing for cotinine and standard spirometry. Tobacco use was estimated by self-reported years of use multiplied by the number of pipe-bowls, cigars, or cigarette packs smoked per day.
Results: The mean age of participants was 66 years, and 51% were women. A broad range of ethnic groups was represented: 35% Caucasian, 26% African American, 22% Hispanic, and 17% Chinese. Self-reported tobacco use was: pipe smoking, 9% (median, 15 pipe-years); cigar smoking, 11% (median, 6 cigar-years); and cigarette smoking, 52% (median, 18 pack-years). A large proportion of pipe or cigar smokers also reported cigarette smoking (88%). Median urine cotinine levels were <10 ng/mL among never-smokers, 43 ng/mL among current cigar smokers, 1324 ng/mL among current pipe smokers, and 4304 ng/mL among current cigarette smokers. Spirometry data demonstrated that persons who smoked pipes or cigars, but not cigarettes, had increased odds of airflow obstruction (odds ratio, 2.13; 95% CI, 1.04 to 5.11; P =0.039). Decrements in lung function were proportionate to cumulative tobacco use. The mean adjusted FEV_1 among smokers of ≥50 pipe-years was 154 mL lower than that in never-smokers, and the mean adjusted FEV_1-to-FVC ratio was 0.2 lower among smokers with ≥10 cigar-years than that in never-smokers although this association was weakened when restricted to cigar smokers who had never smoked cigarettes.
Conclusions: Pipe and cigar smoking increased urine cotinine levels and was associated with decreased lung function and increased odds of airflow obstruction.
Reviewer's Comments: Strengths of this analysis include the large, multi-ethnic sample of participants, demonstration of biologic plausibility via increased urine cotinine levels, and the association of an increased "dose" of pipe and cigar smoking with more significant lung damage. Major limitations of the study include its cross-sectional design and the difficulty determining the relative contribution to lung damage of pipe and cigar smoking versus cigarette smoking. The small number of participants who reported pipe or cigar smoking but not cigarette smoking made estimates of the lung damage less precise in this group, but the increased odds of airflow obstruction was statistically significant. Accordingly, this study makes it all the more reasonable to counsel patients who smoke pipes or cigars that they are at risk for COPD. (Reviewer-John V.L. Sheffield, MD).

Keywords: Tobacco Smoking, Cigar Use, Pipe Use, COPD

Print Tag: Refer to original journal article

HIV Infection Does Not Increase Mortality Risk in ALI Patients

Human Immunodeficiency Virus Infection and Hospital Mortality in Acute Lung Injury Patients.

Mendez-Tellez PA, Damluji A, et al:

Crit Care Med 2010; 38 (July): 1530-1535

In mechanically ventilated patients with acute lung injury, HIV infection does not predict hospital mortality, but among HIV-positive patients, a history of opportunistic infections before admission does predict hospital mortality.

Background: Since the advent of combination highly active antiretroviral therapy (HAART) and other HIV-related health-care protocols, the mortality risk has decreased significantly for HIV patients admitted to the ICU. Previously, the increased mortality risk in critically ill HIV patients was associated with ICU severity of illness, HIV status, mechanical ventilation, CD4 cell count, *Pneumocystis jirovecii* pneumonia, and pneumothorax. However, we do not know whether the hospital mortality rates of today's ICU patients with HIV and respiratory failure are affected by the same risk factors.
Objective: To determine if HIV infection influences the hospital mortality rate and to determine predictors of hospital mortality in HIV patients with acute lung injury (ALI).
Design: Retrospective cohort analysis of data collected in an ongoing prospective study of ALI patients being conducted at 13 ICUs in 4 Baltimore teaching hospitals.
Participants: 520 mechanically ventilated ALI patients without a pre-existing illness limiting patient life expectancy to <6 months.
Methods: Patient records were reviewed for comorbidities and relevant ICU variables. For HIV patients, variables were collected regarding status before hospitalization. The short-term outcomes were compared for HIV-positive and HIV-negative patients with ALI. In addition, HIV-positive ALI patients were analyzed to identify factors predictive of mortality.
Results: In this cohort, 66 patients (13%) were HIV positive. The hospital mortality rate was 44% for HIV-positive ALI patients and was 46% for HIV-negative ALI patients (difference not significant). The median hospital length of stay among nonsurvivors was 13 days for HIV-positive ALI patients and 15 days for HIV-negative ALI patients (difference not significant). The median hospital length of stay among survivors was 29 days for HIV-positive ALI patients and 25 days for HIV-negative ALI patients (difference not significant). The median total hospital charges were $80,341 for HIV-positive patients ALI patients and $80,494 in HIV-negative ALI patients. On multivariate analysis, patient age and severity of illness were predictors of hospital mortality in ALI patients, but HIV status was not. Among the HIV-positive ALI patients, a history of opportunistic infections before hospital admission was an independent predictor of hospital mortality (OR, 6.4; 95% CI, 1.3 to 32.3; *P* =0.025).
Conclusions: HIV infection in ICU patients with ALI is not associated with increased hospital mortality rates, increased lengths of stay, or increased hospital charges. In this patient population, neither ICU nor HIV severity of illness measures are predictive of hospital mortality.
Reviewer's Comments: It would appear (for these data) that the current treatment regimens for HIV disease have significantly impacted the survival of these patients, not only from HIV itself, but from other concomitant diseases. These data should be considered when evaluating patients for admission to the ICU. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Acute Lung Injury, Hospital Mortality Risk, HIV Infection

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Diabetes Modestly Reduces Pulmonary Function

Pulmonary Function in Diabetes: A Metaanalysis.

van den Borst B, Gosker HR, et al:

Chest 2010; 138 (August): 393-406

The pulmonary system is prone to microvascular damage and nonenzymatic glycation in diabetes; this study shows that pulmonary function is modestly, but significantly, impaired in patients with either type 1 or type 2 diabetes.

Background: To date, the findings of various studies have been inconclusive regarding the pulmonary function and lung diffusion capacity of patients with diabetes. However, it is known that the pulmonary system is prone to microvascular damage and nonenzymatic glycation in diabetes.
Objective: To determine if the pulmonary function of patients with types 1 and 2 diabetes is significantly impaired in the absence of overt pulmonary disease.
Design: Meta-analysis of cross-sectional studies.
Methods: Multiple databases were searched for potentially relevant articles of original studies measuring pulmonary function in diabetic patients and controls. Studies of type 1 diabetes were analyzed separately from studies of type 2 diabetes. Pooled estimates were calculated for each pulmonary function parameter investigated.
Results: 40 articles were included in this meta-analysis, which contained data for 3182 patients with diabetes and 27,080 controls. For all studies, the pooled mean difference (MD) of the percent predicted value was -5.1 for FEV_1 (P <0.001), -6.3 for FVC (forced vital capacity; P <0.001), and -7.2 for diffusion of the lungs for carbon monoxide (DLCO; P <0.001). In patients with type 1 diabetes, the MD of the percent predicted value was -2.8 for FEV_1, -3.8 for FVC, and -6.3 for DLCO (P <0.001 for all). In patients with type 2 diabetes, the MD of the percent predicted value was -4.9 for FEV_1, -6.7 for FVC, and -9.3 for DLCO (P <0.001 for all).
Conclusions: In the absence of overt pulmonary disease, pulmonary function is modestly, but significantly, impaired in patients with either type 1 or 2 diabetes; the effect is slightly more prominent in patients with type 2 diabetes. This impairment occurs independently of body mass index, smoking status, duration of diabetes, and HbA1c levels.
Reviewer's Comments: This is a rather intriguing study demonstrating a pulmonary function test (PFT) impairment in patients with diabetes. No obvious explanation for this exists. Perhaps recurring inflammation in the body sets up an inflammatory response in the lung. I am not sure that these impairments warrant testing everyone who has diabetes with PFTs. But then again, doing PFTs on a patient can supply useful information. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Diabetes, Pulmonary Function, Lung Diffusion Capacity

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CT Features Predict Outcome of Re-Expansion Procedures

CT Scan Features as Predictors of Patient Outcome After Bronchial Intervention in Endobronchial TB.

Lee JY, Yi CA, et al:

Chest 2010; 138 (August): 380-385

On CT, the presence of parenchymal calcifications and bronchiectasis within atelectasis distal to the bronchial stenosis are each associated with failed lung-conserving procedures in patients with endobronchial tuberculosis.

Background: In patients with pulmonary tuberculosis (TB), the reported incidence of endobronchial TB ranges from 10% to 20%, and some degree of bronchial stenosis is present in >90% of these patients. Bronchial stenosis may result in atelectasis of the lobes, meaning that symptomatic patients present with progressive dyspnea and cough. Bronchial stenosis can be treated with either lung-conserving techniques (surgical resection and anastomosis. bronchoscopic balloon dilatation, or stent placement) or more aggressive treatments (pneumonectomy or lobectomy). However, no clear indications exist for the use of surgical resection versus lung-conserving treatments.
Objective: To determine if CT scans have features that predict patient outcomes and serve as indicators for selecting the appropriate re-expansion procedure for treatment of endobronchial TB.
Design: Retrospective study.
Participants: 30 patients (age range, 14 to 65 years) with endobronchial TB who had undergone a re-expansion procedure between 2000 and 2008 and who had follow-up CT scans available for review.
Methods: 2 experienced radiologists retrospectively reviewed the CT scans taken before and after the re-expansion procedure. Both radiologists were blinded to patient outcomes. If recovered lung volume was >80% of the original lung volume, the re-expansion procedure was considered successful.
Results: The re-expansion procedures were successful in 9 (30%) of the 30 patients and were not successful in 21 patients (70%). A young patient age (median age, 22 years) was associated with successful re-expansion compared to those with failed re-expansion (median age, 34 years). The following did not predict the success or failure of re-expansion procedures: endobronchial TB activity at the time of re-expansion; duration of bronchial stenosis; location and extent of airway narrowing; and extent of atelectasis. On CT, the presence of parenchymal calcifications and bronchiectasis within atelectasis distal to the bronchial stenosis were each associated with failed lung-conserving procedures. Airway narrowing in the left-side bronchus was more frequently seen on CT than in the right-side bronchus (ratio of 1:4). The prevalence of bronchial TB was significantly greater in women than in men (ratio of 1:6.5).
Conclusions: Bronchiectasis and parenchymal calcifications seen on CT scan are predictive of the failure of lung-conserving therapy in patients with endobronchial TB.
Reviewer's Comments: This study provides us with some CT features that help predict success or failure of lung re-expansion using conservative approaches. Unfortunately there is insufficient power here to help specifically make recommendations on an individual patient. Further evaluation of this, however, might be quite rewarding. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Endobronchial Tuberculosis, Predicting Outcome, CT

Print Tag: Refer to original journal article

Patient Perceptions of Health Help Stratify COPD Risk

Self-Rated Health Predicts Acute Exacerbations and Hospitalizations in Patients With COPD.

Farkas J, Kosnik M, et al:

Chest 2010; 138 (August): 323-330

The perceptions of chronic obstructive pulmonary disease patients regarding their health status are predictive of acute exacerbations and hospitalizations. Physicians are encouraged to use these perceptions to help stratify risk and optimize disease management.

Background: In patients with chronic obstructive pulmonary disease (COPD), a search is underway to find easy-to-use tools for both risk stratification and prevention of exacerbations. In patients with various other chronic diseases, an individual's perception of his or her health status has proven to be predictive of associated morbidity, mortality, and health-care use. Therefore, when asked to rate their general health, patients' answers can provide very useful information that may be associated with important outcomes.
Objective: To determine if self-rated health predicts acute exacerbations and hospitalization in patients with stable COPD.
Design: Prospective study.
Participants: 127 consecutive outpatients with stable COPD, who were seen during 2006 at a university clinic in Slovenia, were included. Patients with concomitant malignant disease, systemic inflammatory disease, or other respiratory diseases were excluded.
Methods: Baseline parameters of demographics, lung function, airflow obstruction, dyspnea, exercise capacity, and body mass index (BMI) were obtained. Patients completed the Center for Epidemiologic Studies Depression Scale. Then, they rated their health status by answering the question, "How would you rate your health in general?" A 5-point Likert scale was used to grade their responses (1, very poor; 5, very good).
Results: The average follow-up was 26 months. In the study group, the mean patient age was 64 years, 79% were men, 82% were Global Initiative for Chronic Obstructive Lung Disease (GOLD) stage II or III, and 43% had arterial hypertension (most prevalent comorbidity). Of the 127 patients, 78 (61%) experienced an acute exacerbation. Of these 78 patients, 16 (20%) rated their health status as either poor or very poor. Of 49 patients who did not have an acute COPD exacerbation during follow-up, only 3 (6%) rated their health status as either poor or very poor. In multivariate analyses, acute exacerbations and hospitalization were both predicted by (1) a self-rated health status of "poor" and "very poor," (2) GOLD stage IV, and (3) BMI, obstruction of airflow, dyspnea, exercise capacity (BODE) score. None of these (or any other) covariates predicted death.
Conclusions: A self-rated health status of "poor" or "very poor" for patients with stable COPD is predictive of acute exacerbations and hospitalization, but not death. Although a universal model has not been established for determining self-rated health status, the perceptions of patients clearly have a role in the clinical management of COPD patients. Therefore, patients should be encouraged to rate their health status on regularly scheduled visits to the clinic.
Reviewer's Comments: These data suggest that the patient knows best. Patients who rated their health as fair or poor were more likely to have an exacerbation of COPD than the other patients. Now we have the question of whether there is something we can do about it. More aggressive treatment for these patients might be the answer, but this would need to be studied further. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Exacerbations, Predicting, Effect of Self-Rated Health

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Fear, Anxiety Descriptors Indicate Greater COPD Impairment

Affective Descriptors of the Sensation of Breathlessness Are More Highly Associated With Severity of Impairment Than Physical Descriptors in People With COPD.

Williams M, Cafarella P, et al:

Chest 2010; 138 (August): 315-322

The language used to describe chronic obstructive pulmonary disease-related breathlessness can be associated with respiratory-related impairments.

Background: In patients with chronic obstructive pulmonary disease (COPD), the sensation of breathlessness has a sensory component (degree of intensity) and an affective component (degree of unpleasantness). The terms used by patients to describe each of these components may potentially indicate the degree of impairment in COPD as measured using common clinical tests.
Objective: To determine whether the language used to by COPD patients to describe their breathlessness is associated with the severity of impairment.
Design: Prospective, observational, correlational study.
Participants: A convenience cohort of 91 COPD patients attending pre-pulmonary rehabilitation assessment.
Methods: The primary measure of global respiratory impairment was the body mass index (BMI), airflow obstruction, dyspnea, exercise capacity (BODE) index. Physiologic impairment was assessed via post-bronchodilator pulmonary function tests and the 6-minute walk test (6MWT). Airflow impairments were categorized via the Global Initiative for Chronic Obstructive Lung Disease (GOLD) stages based on percentage of predicted FEV_1. At rest, patients described the intensity of their breathlessness using a 10-cm visual analogue scale (VAS) and described perceived respiratory disability with a modified Medical Research Council (mMRC) Dyspnea Scale. After a rest period, patients were asked to describe their sensations of breathlessness using their own words (volunteered language) and then to select 3 statements from a list of 15 descriptors that best described the sensation when their breathing was uncomfortable (endorsed language).
Results: Volunteered descriptors categorized as frightening/awful/worried were associated with greater impairment on mMRC, shorter distance walked in the 6MWT, higher GOLD stage (greater airway obstruction), and an increasing BODE index scores (OR, 1.49). Volunteered descriptors of air hunger were associated with greater rates of perceived exertion at the end of the 6MWT. Endorsed descriptors of air hunger were associated with lower ratings of breathlessness intensity at rest. The same was true for endorsed descriptors from the sensory category of "work."
Conclusions: The language used to describe the sensations of breathlessness can be associated with respiratory-related impairments in COPD patients. Airway obstruction, breathlessness-related disability, reduced functional exercise capacity, and more severe global impairment (BODE index) were seen in patients who used extreme affective descriptors to describe their breathlessness. As BODE index scores increased, patients were more likely to volunteer descriptors reflecting fear and anxiety. Patients who use the descriptors of "heavy, rapid, more, shallow, or does not go in or out all the way" were significantly less impaired and had lower BODE index scores.
Reviewer's Comments: Once again, the patient knows best. We must listen to the words our patients say or give them an opportunity to pick words that we can translate into their clinical condition. The data here suggests that certain descriptors can do just that. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Breathlessness, Physical Descriptors, Impairment Severity

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Age, Gender, Disease Severity Influence Time to Death

Predictors of Time to Death After Terminal Withdrawal of Mechanical Ventilation in the ICU.

Cooke CR, Hotchkin DL, et al:

Chest 2010; 138 (August): 289-297

After terminal withdrawal of mechanical ventilation, approximately 50% of patients die within 1 hour and 93.2% die within 24 hours.

Background: In the ICU, communication between physicians and family members are critical when making end-of-life decisions. One area of anxiety for family members is the timing of death once mechanical ventilation and other life support measures are withdrawn. Currently, our knowledge of factors that influence the timing of death after withdrawal of life support is incomplete.
Objective: To determine factors that predict the time to death after terminal withdrawal of mechanical ventilation in ICU patients.
Design: Secondary analysis of data collected from a multicenter randomized trial aimed at improving end-of-life care for ICU patients.
Participants: 1505 ICU patients who died after withdrawal of life support while in the ICU or within 30 hours of being discharged from the ICU.
Methods: Medical records were reviewed for information regarding interventions in the last 5 days of life, patient demographics, clinical variables, diagnoses, and end-of-life care processes. Time to death after terminal discontinuation of mechanical ventilation was calculated. The relationship between time to death and each covariate was analyzed.
Results: After terminal withdrawal of mechanical ventilation, the median time to death was 0.93 hours (range, 0.25 to 5.5 hours), with approximately 50% of patients dying within 1 hour and 93.2% dying within 24 hours. Older patients and women had significantly longer times to death. Shorter times to death were associated with nonwhite race/ethnicity, greater acute severity of illness (indicated by the number of nonpulmonary organ failures and the use of vasopressors and/or IV fluids prior to withdrawal), and surgical service. Other than chronic respiratory disease, nonmetastatic cancer, and dementia, time to death was not affected by most individual comorbidities. However, as the Charlson comorbidity score increased, so did the time to death.
Conclusions: After terminal withdrawal of life support, especially mechanical ventilation, most patients die within 24 hours. Other important factors to consider are patient age and gender and the severity of underlying disease. These findings need further validation.
Reviewer's Comments: One of the most important lessons I have learned during termination of ventilatory support at the time of a patient's death is that the time to death is a bit unpredictable. Most patients' families expect the patient to die rapidly. We always have morphine drips available to prevent dyspnea sensation if it occurs. This study helps us communicate with the families more effectively. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Mechanical Ventilation Withdrawal, Timing to Death, Predictors

Print Tag: Refer to original journal article

HAP Risk Rises When Upper Airway Gurgling Sounds Heard

Gurgling Breath Sounds May Predict Hospital-Acquired Pneumonia.

Vazquez R, Gheorghe C, et al:

Chest 2010; 138 (August): 284-288

The development of hospital-acquired pneumonia in hospitalized patients can be predicted by the presence of upper airway gurgling breath sounds.

Background: In some disease states, normal upper respiratory reflexes are attenuated, which results in a failure to eliminate secretions above the glottis. This condition increases the risk of aspiration and pneumonia.
Objective: To determine whether gurgling sounds heard above the glottis during speech or quiet breathing are predictive of hospital-acquired pneumonia (HAP).
Participants: The first 20 patients with gurgle and 60 patients without gurgle admitted to 1 of 2 medical wards at a single institution between December 2008 and April 2009.
Methods: Gurgling was defined as a low-pitched to medium-pitched rattling sound heard on inhalation or exhalation. On a daily basis, study personnel auscultated over the patient's glottis during quiet breathing and speech. The primary outcome assessed was the frequency of HAP development in patients with and without upper respiratory gurgling sounds. HAP was defined as new infiltrates on chest x-ray plus any 2 of the following: cough; sputum production; fever; leukocytosis; or leukopenia developing >48 hours after hospitalization.
Results: In the population studied, the mean age was 68.5 years, the mean admission Charlson score was 35, and the main comorbidities included dementia, chronic obstructive pulmonary disease, esophageal reflux, and stroke. On univariate analysis, risk factors for gurgle included older age, dementia, neuromuscular disease, stroke, being transferred from a nursing home to the hospital, and receipt of opiates during hospitalization. On multivariate analysis, only dementia (OR, 23.4; 95% CI, 4.2 to 131.9) and receipt of opiates during hospitalization (OR, 14.7; 95% CI, 2.2 to 97.5) were predictive of gurgle. HAP was diagnosed at a mean of 4.7 days into the hospital stay and developed in 55% of patients with gurgle and in 1.7% of patients without gurgle. After adjusting for multiple variables, gurgle was the only independent predictor of HAP (OR 140.1; 95% CI, 5.6 to 3,529). Patients with gurgle were 35 times more likely to be transferred to an ICU than were patients without gurgle. The only independent predictor of in-hospital mortality was the Charlson score. The in-hospital mortality rate was 30% for patients with gurgle and 11.7% for patients without gurgle.
Conclusions: Gurgling breath sounds in hospitalized patients are predictive of the development of HAP. The development of gurgle is predicted by the presence of dementia or the recent receipt of opiates in the hospital. The presence of gurgling breath sounds may provide a clinical means of identifying patients at risk for in-hospital mortality so that measures may be taken to prevent HAP.
Reviewer's Comments: The gurgling breath sounds identified here are the clue to the presence of this condition. The most important eventual outcome for this study would be a strategy that would resolve the gurgle and allow the patients to remain on the floor rather than transfer to the ICU. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Hospital-Acquired Pneumonia, Predictions, Gurgling Breath Sounds

Print Tag: Refer to original journal article

CAP Hospitalization Linked to Shorter Long-Term Survival

Decrease in Long-Term Survival for Hospitalized Patients With Community-Acquired Pneumonia.

Bordon J, Wiemken T, et al:

Chest 2010; 138 (August): 279-283

The long-term survival of patients previously hospitalized for community-acquired pneumonia is significantly reduced.

Background: Currently, little is known about the long-term survival of patients who have been hospitalized for and recovered from community-acquired pneumonia (CAP). Past studies of long-term survival in this population have not accounted for pre-existing comorbidities.
Objective: To determine if hospitalization for CAP is associated with decreased long-term post-hospitalization survival, while adjusting for the confounding effects of comorbidities.
Design: Retrospective, observational, cohort study.
Participants: 624 patients hospitalized for (and recovered from) definitive CAP and 6347 patients hospitalized for medical conditions other than CAP at a single Veterans Affairs (VA) Medical Center from June 2001 through November 2006.
Methods: Baseline characteristics at hospitalization were compared for the 2 study groups. Age and prior comorbidities were determined for each patient using the VA database and included neoplasia, COPD, renal disease, liver disease, heart diseases, hemiparesis, connective tissue disease, dementia, peptic ulcer disease, AIDS, and diabetes. The modified Charlson Comorbidity Index (mCCI) was used to adjust for comorbidities when analyzing the long-term post-hospitalization survival in these 2 patient groups.
Results: The average follow-up was 7.5 years. Patients hospitalized for CAP were more likely to be elderly and have a higher mCCI (67% and 2.0, respectively) than were patients hospitalized for other medical conditions (49% and 1.4, respectively). Although the Kaplan-Meier survival curve showed a progressive decrease in survival for both groups, those who had been hospitalized for CAP had a significantly lower survival rate. For each group, the 50% survival was determined and occurred at 34 months after hospitalization for CAP and at 84 months after hospitalization for non-CAP conditions. As the mCCI increased, the risk of death also increased. After adjusting for elderly age and the mCCI, past hospitalization for CAP was a significant predictor of decreased survival. Overall, patients who had been hospitalized for CAP were 40% more likely to die than were patients who had been hospitalized for other medical conditions.
Conclusions: After adjusting for age and comorbidities, patients who had been hospitalized for CAP had a significantly reduced survival during a 7.5-year follow-up. Long-term survival was even shorter among CAP-hospitalized patients aged ≥65 years and among patients with neoplastic disease, dementia, or liver disease.
Reviewer's Comments: This is the classic, “Which came first, the chicken or the egg?” Do patients at risk for dying get CAP more frequently, or do patients with CAP end up with a high risk of dying? The shorter life span here was unsuspected as we assume CPA once treated did not have sequelae. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Community-Acquired Pneumonia, Hospitalization, Long-Term Survival

Print Tag: Refer to original journal article

EDE, RHC Are Both Good Screening Modalities for Early PAH

Assessment of Pulmonary Arterial Pressure During Exercise in Collagen Vascular Disease: Echocardiography vs Right-Sided Heart Catheterization.

Kovacs G, Maier R, et al:

Chest 2010; 138 (August): 270-278

Exercise Doppler echocardiography appears to offer a reasonable noninvasive alternative to right-heart catheterization for assessing systolic pulmonary pressure in patients with connective tissue disease.

Background: Pulmonary arterial pressure (PAP) is elevated in patients with pulmonary arterial hypertension (PAH). The gold standard for measuring PAP is right-sided heart catheterization (RHC), which is both invasive and expensive. Exercise Doppler echocardiography (EDE) is a noninvasive clinical method that may provide a more affordable alternative for assessing systolic PAP (SPAP).
Objective: To compare EDE versus RHC as screening modalities for early PAH and to determine if the addition of cardiopulmonary pulmonary exercise testing (CPET) enhances the ability of EDE to detect early PAH.
Participants: 52 patients with a diagnosis of connective tissue disease and without known PAH (SPAP >40 mm Hg).
Methods: All patients underwent both EDE and CPET. RHC was suggested for patients whose SPAP was >40 mm Hg during exercise or whose peak oxygen uptake was <75% predicted. The same team performed all measurements. The differences between EDE and RHC measurements were evaluated.
Results: On echocardiography at rest, all patients had normal left ventricular systolic and diastolic function, and no patients had other signs of major cardiac disease. On EDE, elevated SPAP (>40 mm Hg) during exercise was identified in 26 of the 52 patients. Among these 26 patients, CPET demonstrated a peak oxygen uptake that was <75% of the predicted level in 10. RHC was performed in 28 patients, and an elevated SPAP (>40 mm Hg) was identified during exercise in 25 and at rest in 1 additional patient. Overall, the findings of EDE were not significantly different than those of RHC (at rest or at any level of exercise). The positive predictive value of EDE for elevated SPAP was 95%.
Conclusions: EDE appears to offer a reasonable noninvasive alternative to RHC for assessing SPAP at rest and during exercise in patients with connective tissue disease. The addition of CPET to EDE enhances the detection of early PAH. RHC remains the gold standard for assessing suspected cases of PAH.
Reviewer's Comments: It appears that EDE is quite useful in detecting the presence of PAH in patients with connective tissue disease. These patients are frequently exercise-limited by this; therefore, early detection is important. (Reviewer-Eric H. Gluck, MD, JD).

Keywords: Pulmonary Arterial Pressure, Noninvasive Assessment, Echocardiography

Print Tag: Refer to original journal article