This study investigates a proposed hypothesis for the cause of/exacerbating factor IPF. It has been hypothesized that IPF is caused by or, perhaps, exacerbated by chronic microaspirations of acidic gastric secretions. Other smaller studies have investigated the effects of medical and surgical treatment of GERD on IPF, but no larger scale studies have been performed. This group from UCSF and the Mayo Clinic focused on 204 patients from a retrospective cohort of patients with known IPF. Symptoms, comorbidities, and medication use information were obtained prospectively through the use of questionnaires and physician review. This data along with review of each patient’s HRCT and transplant status/vital status were used for the final analyses. Baseline demographics in the overall cohort was notable for 20% use of prednisone, 34% with reflux symptoms, 45% with diagnosed reflux disease, 47% with GERD medication use, and 5% who had undergone Nissen fundoplication.

Regression analysis was used to determine the relationship between the GERD related variables and survival. Significant increases in survival time were noted with each of the GERD related variables – GERD symptoms, GERD diagnosis, GERD medication use, and presence of Nissen fundoplication. The survival time for those taking GERD medications was 1967 days as compared to 896 days for those not taking GERD medications. Further analysis focusing on the comparison of those patients taking GERD medications to those not taking GERD medication demonstrated that those patients taking GERD medications were significantly more likely to be female, significantly more likely to have GERD symptoms and a GERD diagnosis, as well as having a significantly lower radiologic fibrosis score.

Although this study aims to strengthen the link between GERD and IPF, it leaves a lot to be desired. It does demonstrate a nice, although tenuous, link between use of GERD medications and a lower radiologic fibrosis score and possibly increased survival time, but fails to provide strong objective evidence regarding presence or absence of GERD and whether or not the GERD medications actually treated the GERD. It was assumed that patients taking the GERD medications (compliance was also assumed) were prescribed them for GERD, but as many patients were also on prednisone, some of these patients may have been given the medication prophylactically. The study also assumes that the GERD medications were effective – it is not noted in the text of the article whether or not...
patients were asked regarding the symptomatic relief, if any, was obtained with the GERD medications. It also does not address the presence of asymptomatic GERD. To truly investigate the link between GERD and IPF, objective measurements of microaspiration and reflux need to be obtained. A similar study focusing on esophageal pH monitoring in those taking and not taking GERD medications would be a nice first step.


Forced vital capacity and vital capacity have long been used as a measure of disease severity in idiopathic pulmonary fibrosis. Despite prior studies demonstrating percent–predicted FVC as an independent predictor of mortality, the authors felt that the measurement properties of FVC have not been fully validated in prior studies. The goal of Wells et al. in this study is to validate the use of percent predicted FVC by assessing its reliability, responsiveness, and validity. They also seek to determine a minimal clinical importance difference (MCID) in IPF patients. The authors evaluated data previously obtained as a part of two larger studies evaluating the effects of IFN-γ1b; a total of 1156 subjects’ data were reviewed. The studies collected the basic baseline demographic data, as well as FVC, DLCO, and measures of functional status. The measures of functional status varied between the two studies from which the patients were drawn—only one study looked at 6MWD, albeit it was the larger study and included 826 patients. Other measures of functional status various questionnaires (UCSD-SOBQ, SGRQ, HRQL), as well as the Medical Outcomes Study short form. This data was collected every 12 weeks in one study and every 24 weeks in the other.

The authors assessed reliability by comparing baseline percent predicted FVC to a “screening” percent predicted FVC, obtained, on average, 18 days apart. Of note, only 91 patients had these close interval measurements. The intraclass correlation coefficient between these measurements was found to be 0.93. The validity of the percent predicted FVC was assessed by comparing it with other measures such as DLCO, functional status and HRQL. This correlation was weak with the exception of percent predicted DLCO. However, when looking at mean values of percent predicted FVC in comparison to the other measures when they were divided into quintiles, this correlation became somewhat stronger. Responsiveness was assessed by the correlation between changes in the percent predicted FVC as compared to changes in the other measures. On this evaluation, the correlation coefficients were in the range of 0.16 – 0.37, stronger than that seen with the static measurements in the assessment of validity. The data also demonstrated a significant increase in the mortality associated with decreases in percent predicted FVC. A decline in FVC of >10% resulted in a ~5-fold increase in mortality.
over the subsequent year, whereas a decline by 5-10% resulted in a twofold increase in mortality over the subsequent year. The MCID was determined through the use of distribution based and anchor-based methods. The study suggested a MCID of ~ 2-6%. Although the study was rigorous, it has many flaws, including the use of all subgroups of the IFN-γ1b. The authors felt that since both studies from which their populations were drawn were negative, the added benefit of increased power of the study from the higher number of patients was worth the inclusion of both arms of both studies. Also, the mean percent predicted FVC in the study patients was 70, thus this study looked predominantly at patients with mild-moderate IPF and its results may not hold true for those with more severe IPF – MCID may be significantly lower in this sicker population.

CPAP for the Metabolic Syndrome in Patients with obstructive Sleep Apnea


A double blinded randomized study comparing the effect of CPAP and Sham CPAP on the metabolic syndrome associated with Obstructive sleep apnea. A total of 90 subjects were randomized and 86 of them completed the study; 46 were randomized to the CPAP first group and 44 to the Sham CPAP first group. These pts underwent 3 months of treatment with CPAP and a one month wash out period between the CPAP and sham CPAP. The overall effects (improvement in metabolic profile) were seen more in the CPAP group than the Sham CPAP group. There was a significant decrease in BMI, abdominal fat (assessed by CT). The study carries such implications of strengthening the evidence that CPAP is a good tool which can be used with good effect in patients with obstructive sleep apnea

The limitation of the study being that the “washout” period of one month might have been very short.

Percutaneous Catheter Decompression in the Treatment of Elevated Intraabdominal Pressure.

Cheatham ML, Safcsak K. Chest 2011; 140(6):1428-1435

The traditional approach to treating intraabdominal hypertension (IAH) and abdominal compartment syndrome has been through surgical laparotomy. The authors look at the efficacy of bedside drainage of intraperitoneal fluid or blood with percutaneous catheter decompression (PCD) compared to open abdominal decompression (OAD).
First, a review of the definitions and management algorithms for IAH and ACS by the WCACS. IAH is defined as a sustained or repeated elevation of IAP > 12 mm Hg and ACS is a sustained IAP > 20 mm Hg associated with new organ dysfunction or failure. The guidelines emphasize (1) a need to use early IAP monitoring when risk factors are present; (2) improve abdominal wall compliance with sedation, analgesia, or paralysis; (3) using nasogastric or rectal decompression to evacuate gastric contents; (4) evacuate abdominal fluid collections with PCD if appropriate; (5) correcting positive fluid balance; (6) supporting organ function with proper resuscitation; (7) early surgical intervention with IAP exceeds 25 mm Hg and organ dysfunction present.

**Impact of Race on Asthma Treatment Failures in the Asthma Clinical Research Network.** AJRCCM 2011; 184: 1247-1253.

This study compares African American patients versus White patients (self-reported race) in regards to asthma treatment failures. Recent studies have reported increased adverse responses with specific therapies, particularly in African Americans. The Asthma Clinical Research Network is a group of clinical research centers involved in various clinical trials related to asthma therapy. The study cohort of 1200 patients were enrolled in various clinical trials across the country of varying durations. Only self-reported Whites and African American patients were included in analysis due to low numbers of other demographics. There were 795 Whites and 233 African Americans. There was no difference in baseline FEV1 % predicted, exhaled NO, asthma-related quality of life, or age. Whites had a higher daily symptom score as well as daily rescue β agonist puffs. African Americans were more likely to have a treatment failure (19.7% vs. 12.7%, p=0.0074) during the various study periods. When stratified by treatment received, there was no difference between races when subjects did not receive LABA therapy. However, when on LABA therapy, African Americans were almost twice as likely to have a treatment failure (44.4% vs. 25.4%, p=0.0017). This difference remained significant whether or not other therapies such as inhaled corticosteroids or leukotriene receptor antagonists were used. There was also a higher rate of failure when using ICS or LTRA, but only when used concurrently with a LABA. As all patients were enrolled in studies, they all had equal access to medications and follow-up, so it was not felt that access to care was responsible for the differences. While it can’t be stated that the LABAs are the causative agent for treatment failures in African Americans, the association is extremely important. The reason for this association is not entirely clear. Recent studies have reported increased adverse responses with specific therapies, particularly in African Americans. The Asthma Clinical Research Network is a group of clinical research centers involved in various clinical trials related to asthma therapy. The study cohort of 1200 patients were...
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Contrast induced-acute kidney injury (CI-AKI) is classically defined as an increase in serum creatinine ≥ 0.5mg/dl or ≥25% within 48-72 hours after contrast application and accounts for approximately 11% of hospital-acquired renal failure. However, in an ICU population, there are many other risk factors (antibiotics, hypotension, sepsis, etc.) that could contribute to the development of AKI. A group of radiologists from a Belgium hospital was interested in determining the risk factors, complications and long-term outcomes of CI-AKI in an ICU population.

This was a retrospective single-center study that included all ICU patients who underwent a contrast CT scan or non-coronary angiography. Patients were excluded if they had a second contrast procedure within 3 days of the first or if they had dialysis at the time of contrast administration. The primary outcome of the study was the development of contrast-associated-AKI (CA-AKI) defined using the definition above. Secondary outcomes included treatment with RRT, ICU and hospital stay length of stay and mortality.

The final study cohort consisted of 787 ICU patients. Of those patients, 79% underwent contrast-CT scan and 21% had non-coronary angiography. CA-AKI occurred in 16% of patients, most of them

Emily Gilbert reviewed Intensive Care Medicine

with AKI stage 1. Twenty-four percent developed stage 3 AKI and of those patients, 45% required initiation of RRT. Patients who developed CA-AKI were typically older, had worse baseline kidney function, had higher APACHE II score on admission and were more likely to be in the medical ICU. At the time of contrast administration, they had lower hemoglobin concentrations, lower MAPs and were more likely to be on vasopressors or mechanical ventilation. Not surprisingly, those who developed CA-AKI had worse kidney function at time of discharge, longer LOS and higher mortality, even up to 1 year after contrast administration. When adjusting for different factors present in ICU patients, serum creatinine, administration of diuretics, hypotension and vasopressors remained independent risk factors for the development of CA-AKI.

Preventative measures (NAC or sodium bicarbonate) were used in 39% of patients in the study cohort. There was no standardized indication for the use of these measures but in general, it was used in about 60% of patients with either Cr ≥ 1.2mg/dl or eGFR<60 mL/min at the time of contrast administration. Interestingly, there was no difference in the occurrence of CA-AKI between patients who received preventative measures and those who did not.

The strengths of the study include its large study size and its long-term outcome follow-up (up to one year after contrast administration). The study is limited by the fact that it is a single center study and by its retrospective nature. I don’t think anyone was surprised that patients who develop AKI while in the ICU have worse outcomes but it is interesting to note that hypotension and the use of diuretics prior to contrast are independent risk factors for the development of AKI. Perhaps we should be more diligent in ensuring euvoeemia prior to a contrast study. Also, maybe we should use these risk factors (in addition to elevated creatinine) when determining who receives NAC +/- bicarbonate prior to contrast.

New insights into weaning from mechanical ventilation: left ventricular diastolic dysfunction is key player

Papanikolaou J. et al

LV diastolic dysfunction may be a cause of weaning failure from mechanical ventilation. Removal of positive pressure ventilation leads to an increase in negative intrathoracic pressure and increased venous return causing an increase in afterload and preload which may lead to pulmonary edema. This hypothesis has been studied in previous papers but included patients with LV systolic dysfunction and/or known heart disease. This particular paper is a prospective study that excluded any patients with cardiac pathology, atrial fibrillation or abnormal LV ejection fraction. Patients were included if they were on the ventilator for more than 72 hrs. And if they were medically ready for a spontaneous breathing trial (which consisted of a 30-minute t-piece trial), based on several set criteria (hemodynamic stability, alertness, etc.). The patient then had a subsequent evaluation including ABGs and RSBI to
ensure they were ready for a SBT. TTE was performed immediately prior to the SBT, while the patient was on pressure support ventilation, and then again after 30-minutes of SBT regardless of whether the patient failed or passed the SBT. To assess for diastolic dysfunction, E/A ratio was measured (conventional measurement) along with more advanced measurements: E/Em and E/Vp. (Peak velocities of early (E) and late (A) LV diastolic filling measured using mitral inflow pulsed-wave doppler signals; Em = tissue doppler imaging-derived peak early diastolic velocities at the lateral/septal mitral annulus and lateral tricuspid annulus; Vp = color M-mode Doppler velocity of propagation.)

Fifty patients were included in the study and of these 50 patients, 28 patients (56%) failed weaning: 23 failed the SBT and 5 passed the SBT but required reintubation within 48 hours. Fifteen of the 23 patients who failed the SBT demonstrated signs of pulmonary edema and four showed ST-deviations on EKG. All the patients had a normal EF prior to SBT, with an average EF of 60%. LV diastolic dysfunction tended to deteriorate between the pre-SBT echo and the end-SBT echo though it was not statistically significant. The mean fluid balance over the three days preceding the SBT did not predict the degree of diastolic dysfunction. COPD patients had more diastolic dysfunction than other patients and more SBT-induced worsening of diastolic dysfunction. Patients who failed weaning had higher E/Em or E/Vp ratios before SBT when compared to those who successfully weaned. Pre-SBT lateral E/Em > 7.8 predicted weaning failure with a sensitivity of 79%, specificity of 100% and positive predictive value of 100% (AUC 0.86). This value was more predictive of weaning failure than the E/Vp ratio (cutoff >1.51, AUC 0.74) and the f/VT ratio (cutoff value >58.5, AUC 0.75).

This study is interesting because it supports the hypothesis that diastolic dysfunction contributes to weaning failure, especially in COPD patients. This suggests that weaning outcomes may improve with concomitant administration of medications that decrease afterload and preload such as nitrates and diuretics. It does, however, require frequent TEE performed by an expert because measurements such as E/Em need to be measured accurately and this is not readily available and/or feasible in most ICUs.

**Outcomes of extubation failure in medical intensive care unit patients.**
Thille AW, Harrois A, Schortgen F, Brun-Buisson C, Brochard L.

Prospective examination of outcomes of all patients admitted to medical intensive care unit and who required mechanical ventilation at a single center in France.

Average age of patients was 59 and the median vent time was 5 days with a range between 2 and 13 days. ICU mortality was high at 49%. In order to be considered for extubation patients had to be on minimal vent settings with SpO2’s >90%, with minimal suctioning needs and no contraindications to extubation. Patients then underwent a 60min T-piece trial and if they did not develop tachypnea/tachycardia, hyper/hypotension, hypoxia, or unbearable dyspnea or agitation they were extubated.

Of the 340 patients evaluated, 135 were not extubated (132 died, 3 were transferred for unmentioned reasons), 168 underwent planned extubation, 31 had an unplanned extubation, and 6 were trached. Of the 168 planned extubations 30 required reintubation (4 >72 hrs. after extubation).

They reviewed the 30 patients requiring reintubation and saw that they were more likely to be >65
and have an underlying cardiac condition.

The unplanned extubations broke down to 21 self-extubations and 10 accidental extubations. All 10 accidental extubations had to be reintubated and 10 of the 21 self-extubations had to be reintubated.

There were no statistically significant differences between the unplanned extubation successes and the failures.

They then compared the planned extubations to the unplanned extubations and saw that the unplanned extubations had a higher carina to ET-tube tip distance indicating that proper tube placement could decrease the number of unplanned extubations.

Ultimately they arrived at the conclusion that the characteristics of being >65 yrs. old and having an underlying cardiac condition could characterize a patient as 'difficult to wean' and it may be appropriate to use bipap in these patients post extubation. This will need some further study to be sure as that is a pretty significant leap in logic.