for detecting pneumothorax and hemothorax. Ruling out these thoracic lesions by ultrasonography was also important to avoid potentially harmful decisions. For example, we searched for the absence of lung sliding associated with A lines and no lung pulse to define pneumothorax, as suggested previously.2 The lung point was sought systematically but was found in only 15 of 53 pneumothoraces.

In our study, thoracic ultrasonography was better than combined clinical examination and chest radiography. Its diagnostic performance was more enhanced even in the most severely injured patients. Our results strongly argue in favor of the extensive use of thoracic ultrasonography for multiple trauma patients, provided that rigorous criteria are used to diagnose thoracic lesions.

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Arterial Line or Cuff BP?

To the Editor:

Arterial catheterization (AC) is commonly used in critically ill patients despite the lack of data supporting the benefit of use in clinical practice and substantial risk.1-5 We investigated the relationship between cuff- and AC-measured BPs in 34 patients with shock treated in our medical ICU. A total of 1,363 paired arterial and cuff BP readings (13-82 per patient) were measured within 1 to 2 min and recorded by bedside nurses. Bland-Altman analysis for systolic BP (arterial – cuff) showed a bias of 0.9 mm Hg (95% limit of agreement [LOA], -32.2 to +34.1 mm Hg) (Fig 1). Bias for diastolic BP was -1.3 mm Hg (95% LOA, -24.9 to +23.3 mm Hg) (Fig 2).

Overall, 18.9% of the paired systolic BP readings differed by at least 20 mm Hg, and 29.1% of paired diastolic BP readings differed by at least 10 mm Hg. To adjust for potential clustering of measurements, bootstrap Bland-Altman analysis averaged over 5,000 replications yielded similar results to unclustered analyses for systolic BP (bias, 1.2 mm Hg; 95% LOA, -35.7 to +38.0 mm Hg) and diastolic BP (bias, -1.2 mm Hg; 95% LOA, -24.9 to +22.4 mm Hg).

These data, representing the largest report of paired cuff and AC BP measurements to our knowledge, demonstrate significant differences between cuff and AC BP measurements within and across patients. These differences are likely to have an impact on management decisions until more-robust efficacy data arrive to inform optimal BP monitoring.

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Peri-Lung Transplant Renal Issues in Patients With Cystic Fibrosis

To the Editor:

We read with interest the article by Quon et al1 in an issue of CHEST (July 2012) on the risks of post-lung transplant renal dysfunction in patients with cystic fibrosis (CF). We agree that patients with CF are at a heightened risk posttransplant for renal dysfunction secondary to pretransplant risk factors, including dehydration and chronic aminoglycoside use. In our own cohort of adult patients with CF, we have shown an increasing prevalence of renal dysfunction with declining lung function, particularly in patients approaching the need for lung transplantation assessment. Using the Cockcroft-Gault formula, 36 of 90 (40%) stable consecutive adult patients with CF attending our center had estimated creatinine clearance (CrCl) $< 90$ mL/min/1.73 m², (mean, 101.8 mL/min/1.73 m², SD ± 28.5). Applying multivariate linear regression, estimated CrCl correlated with declining lung function ($r = 0.33$, $P = .002$) but not with age, sex, BMI, or CF-related diabetes mellitus.

We also agree that the need to identify pretransplant renal dysfunction in patients with CF is of increasing importance as a predictor for post-lung transplant renal dysfunction as highlighted in Quon et al. Only two patients (2.2%) in our cohort exhibited serum creatinine concentration outside the laboratory reference range (70-130 $\mu$mol/L), further emphasizing that as an assessment of renal function in patients with CF, serum creatinine concentration alone is an insufficiently sensitive marker. Both of our patients had estimated and subsequently measured 24-h CrCl $< 50$ mL/min/1.73 m² and may, therefore, not be eligible for lung transplantation. The quarterly pretransplant use of surrogate markers, such as the Cockcroft-Gault equation, the Modification of Diet in Renal Disease estimated glomerular filtration rate evaluation, or other validated tools in stable adult patients with CF2 will highlight renal dysfunction earlier.

One important caveat, however, not highlighted in Quon et al2 is the increased incidence of accelerated renal function decline in patients with CF when compared with that of patients with idiopathic pulmonary fibrosis or CFOPD post-lung transplant. In addition to calcineurin-inhibitor toxicity in these cohorts, patients with CF are furthermore predisposed to oxalate nephropathy and pigmented tubulopathy.13 The lifetime use of antibiotics in patients with CF reduces the oxalate scavenging organism Oxalobacter formigenes from the colon, resulting in enteric hyperoxaluria. Perioperative stressors, including dehydration, hypoxia, and antibiotics, in conjunction with hyperoxaluria can result in crystallization of calcium oxalate on proximal tubular cells around the time of surgery, which can be demonstrated on renal biopsy. The pigmented tubulopathy in patients with CF post-lung transplant is characterized by intracellular accumulation of silver stain-positive pigmented granules with the histopathologic characteristics of lipofuscin and correlates clinically with the use of antivirals, aminoglycosides, and glycopeptide antibiotics in the month preceding their accelerated renal function loss. We believe an increased awareness in the detection and pathogenesis of renal dysfunction in patients with CF will facilitate tailored strategies.

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