Choice of Imaging Studies in Acutely Ill Pregnant Women

To the Editor:

The case report in CHEST (June 2015) by Daglian and Patrawalla highlights the challenge of emergency care of the obstetric patient. While the innovative use of lung ultrasonography for rapid and accurate diagnosis in respiratory failure is promising and could be particularly beneficial to the pregnant patient, we would like to suggest redirecting strategies for selecting diagnostic studies in complicated pregnant patients to focus on timely diagnosis and avoiding undue concerns about safety risk.

As in the nonpregnant population, lung ultrasonography would be most attractive if it has good positive and negative predictive value, is safe, and there is expertise with using and interpreting it locally. It is common for providers to withhold tests in a pregnant patient due to presumed risks to the fetus. This may lead to delays in diagnosis as well as diagnostic and therapeutic errors, resulting in similar or worse harm. In this case report, chest radiograph was initially withheld, and pulmonary embolism (PE) was excluded based on Doppler testing of the legs alone. Though PE was unlikely in this patient, clinicians had a high enough suspicion to empirically initiate anticoagulation treatment, bypassing diagnostic testing. Such practices are considered substandard care in the nonpregnant population; the same should apply to pregnancy.

In the United States, reducing maternal mortality and morbidity remains a challenge, with the maternal mortality ratio doubling between 1990 and 2013 in part due to inconsistent obstetric practice across hospitals. Peripartum VTE, still one of the leading causes of maternal deaths in the United States, has been identified as one of the priority bundles by the National Partnership for Maternal Safety. By standardizing care through the use of evidence-based national guidelines, we can decrease PE-related maternal deaths as seen in the United Kingdom.

Current guidelines recommend that in pregnant women with suspected PE and no signs and symptoms of DVT (as in this case), studies of the pulmonary vasculature should not be delayed. This includes chest radiograph followed by either a CT angiogram or a ventilation perfusion scan. While the risk of teratogenicity requires a radiation threshold of at least 5 rad, a CT angiogram or chest radiograph exposes the fetus to very small amounts of radiation (0.01 rad and 0.0002 rad, respectively). Lung ultrasonography may prove to be a valuable tool, however, it should not replace our current standard of care in pregnant women until it becomes fully validated both in and outside of pregnancy.
Lung Density in Extremely Large Healthy Lungs

To the Editor:

One of the possible limitations of the study presented by Brown et al1 recently in CHEST (October 2015) is that they analyzed larger lungs were of subjects with COPD, where alveolar size and density may have been influenced by disease. In this regard, competition free divers who practice glossopharyngeal breathing are a peculiar group to study because they are known to be able to greatly expand their maximal lung volumes but retain their normal baseline lung compliance at functional residual capacity.2,3

In collaboration, we constructed a chart of the data from Brown et al 1 together with lung size and alveolar density calculations from CT scans previously performed on six competitive free divers 3,4 (Fig 1). The range for nonpathologic lung volumes at maximum inspiration is now from approximately 3,000 to 12,000 mL, substantially extending the previously presented curvilinear relationship. These new data extend the range for normal lungs to completely surround the data for the subjects with COPD. These extended data support the notion that people with larger lungs have bigger alveoli and that this anatomic

Figure 1 – Brown et al1 mean lung density (HU) and lung volume continuum. Blue circles = subjects with COPD; gray circles = subjects without COPD; and red circles = additional free diving subjects. HU = Hounsfield unit.

References