mors may have increased extraction efficiencies and/or amine receptors, which could account for increased IMP localization.

FOOTNOTE

*Siemens dual detector Rota camera with ADAC 3300 image processor.

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Congenital Lobar Emphysema: Segmental Lobar Involvement Demonstrated on Ventilation and Perfusion Imaging

TO THE EDITOR: We performed ventilation and perfusion imaging in an infant with proven congenital lobar emphysema (CLE). Our studies, confirmed by surgical and pathologic examination, demonstrated a segmental distribution of emphysema within the involved lobe. This distribution of disease has not been previously reported.

A 29-day-old male infant was transferred to our facility for evaluation of persistent respiratory distress. The infant was the product of a normal term pregnancy and uneventful Cesarian section; however, tachypnea, tachycardia, and cyanosis were noted within 24 hr of birth. The chest radiograph showed a relatively radiolucent left hemithorax, with shift of the mediastinum to the right, suggesting hyperexpansion of the left lung. Ventilation and perfusion pulmonary imaging was requested for further evaluation. Xenon-133 gas was administered through an endotracheal tube using a closed rebreathing system and manual bag ventilation. Perfusion imaging was subsequently performed using 2.0 mCi of technetium-99m macroaggregated-albumin. A large field-of-view gamma camera with a converging collimator was used for both studies to provide adequate magnification. The ventilation study showed first breath defects involving the apicoposterior and lingular segments of the left upper lobe (LUL) with sparing of the anterior segment (Fig. 1) These defects filled in during equilibration and prolonged retention of radioactivity in the left hemithorax was seen on washout images. The perfusion images showed matching LUL segmental defects with intact perfusion of the anterior segment (Fig. 1). Because of continued respiratory compromise, a thoracotomy was performed revealing a grossly hyperexpanded LUL. Although the anterior segment appeared normal, a left upper lobectomy was performed due to the technical difficulty of preserving the anterior segment in such a small infant. Microscopic examination of the affected segments revealed emphysema, with dilated air spaces and bridging of alveolar septae. Bronchi from the diseased segments showed segmentation and disorganization of the bronchial cartilage with mucosal papillary infoldings. These findings are characteristic of CLE. The infants improvement and subsequent discharge was so rapid that a follow-up ventilation and perfusion study was not feasible.

CLE is a rare disorder which usually presents in the neonatal period as respiratory distress due to air trapping and hyperexpansion of a pulmonary lobe (*1*). The classic radiographic appearance is hyperinflation of a lobe with preservation of bronchovascular markings in the lucent region. Mediastinal shift with atelectasis and displacement of adjacent and contralateral lobes is frequently seen (*2*). Coexistence of respiratory distress in a neonate or young infant and the classic radiographic presentation of CLE is usually diagnostic and adequate to justify immediate thoracotomy and curative lobectomy. However, CLE not uncommonly presents later in infancy or childhood with less convincing radiographic findings (*3*). The less urgent clinical setting and the desire to avoid unnecessary surgery may result in the opportunity to perform ventilation and perfusion imaging to permit a more accurate diagnosis. Since the original report by Mauney and Sabiston, several authors have reported perfusion imaging to be safe and informative in evaluating CLE (*4, 5*). Few ventilation studies of children with CLE have been published and as expected, the pattern reported to date has been one of matching ventilation and perfusion defects involving the emphysematous lobe with prolonged Xenon retention (*6, 7*). No previous report has illustrated that the disease may have a segmental distribution within the involved lobe.

Ventilation and perfusion imaging may reduce the need for more invasive studies and may prove useful in following the clinical reponse of surgically and conservatively treated children with CLE (*8, 9*). We have demonstrated that CLE can occur in a segmental distribution within an involved lobe. This pattern must be recognized for proper interpretation of ventilation and perfusion images in children with possible CLE.

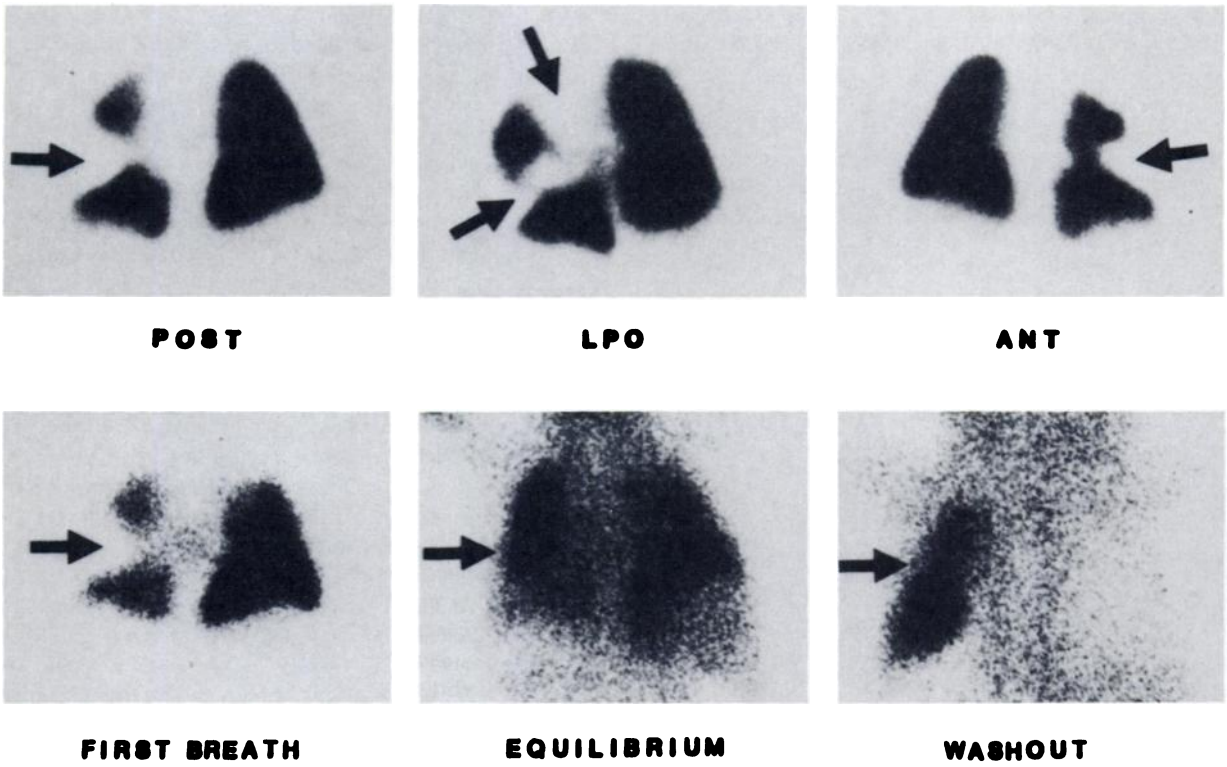

FIGURE 1
Perfusion study demonstrates segmental LUL defects (arrows) with sparing of anterior segment. Posterior ventilation images show corresponding segmental first breath defects (arrow) with prolonged retention of xenon

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Cost of Gamma Photon Absorptiometry in Management of Osteoporosis

TO THE EDITOR: The Office of Health Technology Assessment (OHTA) is currently evaluating techniques for bone mineral measurement. The real issue is whether photon absorptiometry or x-ray computed tomography (CT) is approved for reimbursement. It is thus unfortunate to see this issue obscured by debates that place single- and dual-photon absorptiometry in adversary positions, when in fact both have important clinical applications.

Before techniques can be compared, it is first essential to define their *clinical use.* For bone mineral measurements, there are at least two, distinctly different clinical applications: (a) *screening* for fracture risk prediction, and (b) *monitoring* of treatment effectiveness and side effects.

Once the clinical uses have been determined, we must next define, for each clinical use, the criteria for evaluating BMC measurement techniques. The criteria for evaluating a *screening* test are not identical to the evaluation criteria for a