subsequently review the findings of a more recent study by Green et al., comparing LDH given every 8 h and LMWH. The incidence of DVT with LDH given every 8 h was 25 percent; there were no thromboembolic events observed with LMWH. However, in another recent study performed at the same institution, approximately 22 percent of SCI patients given LMWH developed thromboembolic events, one of which was fatal. Before one concludes that LDH, even with every-12-h scheduling, is ineffective, one should review the Midwest Regional SCI Care System experience with DVT incidence without prophylaxis. They reported an incidence of 78 percent. Their current practice is to use LDH in a dosage of 5,000 U every 8 h.

In a population in which the incidence of DVT is alarming, every effort should be made to define effective prophylactic measures. Endeavors aimed at improving the current practice of medicine are welcomed, but they must be based upon a solid foundation of scientific evidence. While LMWH and adjusted-dose heparin appear promising, the efficacy of LDH cannot be completely disregarded until clearly proven otherwise.

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Kerley B Lines as a Radiologic Manifestation of Pneumocystis carinii Pneumonia

To the Editor:

We describe a case in which extensive Kerley B-line formation occurred in the setting of acute Pneumocystis carinii pneumonia. A 31-year-old HIV-positive man presented with a 3-week history of fatigue, chills, night sweats, mild dyspnea on exertion, and a nonproductive cough. Physical examination revealed the following: temperature, 101°F; pulse, 80 beats/min and regular; blood pressure, 110/50 mm Hg; respiratory rate, 16 breaths/min with bilateral crackles at the bases. Cardiac examination was normal.

Arterial-blood gas (room air) analysis disclosed the following values: pH, 7.49; Pco2, 29 mm Hg; Po2, 54 mm Hg. A chest radiograph (Fig 1) revealed prominent Kerley B lines, in addition to the classic bilateral interstitial infiltrates seen in P. carinii pneumonia. Transbronchial biopsy revealed P. carinii pneumonia. The patient responded clinically and radiologically to trimethoprim-sulfamethoxazole. Isolated linear opacities have been described in 41 percent of cases of uncomplicated P. carinii pneumonia and in 9 percent of other pneumonias. Other atypical radiographic appearances of P. carinii pneumonia include unilateral or focal infiltrates, cystic changes, nodular opacities, and lung abscesses. This case illustrates that extensive Kerley B-line formation may also be an unusual radiographic manifestation of acute P. carinii pneumonia.

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Formal Thoracotomy With Pulmonary Resection

To the Editor:

I read with interest the article by Dowling et al., which appeared in the November 1992 issue of Chest. These authors advocate video-assisted thoracoscopic resection in both diagnosis and treatment of peripheral pulmonary metastases. I have no difficulty accepting video-assisted thoracoscopic resection of pulmonary metastatic lesions for diagnosis. However, I have some difficulty accepting
thoracoscopic resection as a definitive technique purporting to remove all gross peripheral pulmonary metastatic lesions. Dowling and colleagues emphasize the use of high-resolution, thin-cut chest computed tomography in the setting of surgical management of pulmonary metastases. In my own practice, however, I have resected palpable peripheral metastatic lesions during formal thoracotomy, which were not detected with preoperative high-resolution, thin-cut chest computed tomography. These lesions were detected by finger palpation of normal-appearing lung during single-lung anesthesia and would not have been detected by thorascopic inspection of a collapsed lung; it is improbable that they would have been detected by endoscopic probing of pulmonary tissue. Therefore, I am reluctant to accept thoracoscopic resection as an alternate to formal thoracotomy with pulmonary resection when the goal is curative resection of peripheral pulmonary metastatic lesions.

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Nebulizers Should be Labeled Accurately

To the Editor:

High flows (approaching 100 L/min) should become a standard of care for patients who present with hypoxemia and the ability to hyperventilate.

I read with interest the article entitled "Modification of an Aerosol Mask to Provide High Concentrations of Oxygen in the Inspired Air" by Chechani et al in the December 1991 issue of Chest.1 This information when coupled with the information provided in the article by Foust et al on the "Shortcomings of Using Two Jet Nebulizers in Tandem With an Aerosol Face Mask for Optimal Oxygen Therapy," which appeared in the June 1991 issue of Chest, strongly points out the need for high flows to achieve accurate alveolar concentrations of oxygen.2

We also performed a similar study to that of Chechani comparing the conventional nonrebreathing O2 mask at 12 L/min with the high flow nonrebreathing mask (HFNR) at flows sometimes approaching 100 L/min, as described in the aforementioned article.3 The findings follow:

The data in Table 1 reflect transtcutaneous Po2 readings on 11 healthy volunteers between 20 and 35 years of age breathing quietly at rest. The results in column 2, which were collected while the volunteers were wearing a conventional nonrebreathing mask at 12 L/min, were compared with the results in column 3 where they were wearing a HFNR at 60+ L/min. The Student's paired t test revealed a p<0.001 with a mean improvement in transtcutaneous oxygen tension of 179.6 mm Hg with the HFNR. There was a 95 percent confidence limit that the tcPo2 would increase at least 162.8 mm Hg and perhaps as much as 197.2 mm Hg, p = 0.002 when the Wilcoxon matched pairs signed-ranks test was performed. When looking at the percentage of change between columns 2 and 3, mean improvement was 63 percent with t = 12.70 and p<0.0001.

Although we measured transtcutaneous Po2 levels instead of arterial Po2, the data seem to compare favorably with Chechani's. When compared with the 120 mm Hg improvement in five normal volunteers in the Chechani article, the 190 mm Hg difference in this study can be explained by the lower flow to the conventional nonbreather then progressing to a higher flow via HFNR.

In our volunteers, the marked improvement, when switched to the HFNR at 60+ L/min, can only be explained by the dilutional effects of their passive peak inspiratory flows. If this degree of dilution occurs in passively breathing normal individuals, how much worse will the dilution be in the tachypneic individual?

In regard to Chechani's modified aerosol mask, three flowmeters were used to achieve about 80 L/min flow. Technically speaking, virtually any flowmeter will deliver at least 50 L/min on flush (some can deliver 100 L/min) so 100 L/min can be achieved by using one or two flowmeters on flush adapted to any low resistance humidifier (cascade, wick-type, etc). The gas injection nebulizer by MMCA Misty Ox (Costa Mesa, Calif) with two flowmeters is also capable of flow outputs in the range of 90 to 130 L/min of 100 percent O2. To our knowledge, all other available jet nebulizers limit the output of one flowmeter to roughly 15 L/min. Hence, they usually deliver inadequate flows to achieve alveolar O2 concentrations greater than 40 percent when one nebulizer is used or greater than 60 percent when two nebulizers are used.

The clinical implications of these findings strongly imply that quantitating the degree of hypoxemia based on the response to conventional O2 devices by calculating shunt, A-a gradients, or Po2 to fraction of inspired oxygen ratios is erroneous and could lead to misguided therapeutic interventions. Manufacturers should, therefore, design nebulizers that are capable of flows that deliver the labeled O2 concentrations or remove the labeling that leads the user to believe that they are actually achieving a given concentration when they are not.

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