with tissue infiltration of fluid from the proximal port was more probable than catheter-tip erosion through central venous structures in our patient series. All catheters were sutured to the skin to prevent migration, and seven of the eight patients had radiographic evidence of sufficient catheter insertion to avoid positioning of the proximal port within chest-wall tissues. In the remaining patient, the right subclavian catheter tip was positioned just below the clavicular head. This position may have contributed to pleural effusion formation by the infiltration of fluid infused through a proximal port. Radiographic contrast material infused through the distal port of this catheter, however, demonstrated extravasation into the mediastinum and erosion of the catheter tip through the medial wall of the right brachiocephalic vein. In all four patients who underwent contrast infusion, the contrast was instilled through the distal port of the catheter and demonstrated catheter erosion through central venous structures.

Dr. Bach's recent report lends support to another mechanism of pleural fluid formation in patients with poorly secured central venous catheters undergoing migratory withdrawal. His observations, however, do not exclude the importance of catheter-tip erosion when catheters move in the opposite direction.

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Causes of Pleural Effusion in 75 HIV-infected Patients

To the Editor:

In HIV-infected patients, infectious, malignant, or aspecific etiologies have been frequently reported as the origin of broncho-pulmonary lesions. However, there are very few data about the types and frequency of different causes of pleural effusion in such patients. We have retrospectively scrutinized the causes of pleural effusion in 75 HIV-infected patients diagnosed in the east Paris hospitals between 1986 and 1989. Criteria for pleural effusion of infectious origin were as follows: (1) identification of an opportunistic pathogen or Mycobacterium tuberculosis by direct examination and/or culture of pleural fluid specimens; (2) presence of pleural lesions specific for tuberculosis; or (3) identification of a pathogen by blood culture and/or culture of protected bronchial specimens followed by a favorable outcome on appropriate anti-infectious treatment for bacteria. Criteria for pleural effusion due to Kaposi's sarcoma were as follows: (1) typical macroscopic pleuropulmonary lesions seen during thoracoscopy or thoracotomy with confirmation on biopsy specimen; or (2) histologically confirmed skin lesions associated with characteristic macroscopic endobronchial lesions and bilateral lung abnormalities suggestive of Kaposi's sarcoma on chest radiography and computed tomography. Biopsies were also diagnostic for malignant causes other than Kaposi's sarcoma.

The underlying cause of pleural effusion was definitely established in 61 cases (81 percent). Table 1 shows the causes of pleural effusions in these 61 cases. Pleural effusions caused by aerobic bacteria were usually associated with pneumonia (8 of 11 cases, of which 6 were due to Streptococcus pneumoniae). Their frequency was probably underestimated because of possible negative culture results related to empirical antibiotic therapy prior to investigation. Pleural effusions due to opportunistic agents were caused by Cryptococcus neoformans (n = 4), Leishmania donovani (n = 1), and Pneumocystis carinii (n = 1). Tumors other than Kaposi's sarcoma were lymphoma (n = 2) and squamous cell carcinoma (n = 1).

Although pleural effusions are observed in 50 percent of patients with pulmonary Kaposi's sarcoma, Kaposi's sarcoma and infections were nearly equally responsible for pleural effusion in our series. In an HIV-infected patient with pleural effusion, clinical and radiologic data that are highly suggestive of Kaposi's sarcoma are highly useful in the selection of the diagnostic and therapeutic approach.

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REFERENCES


Management of Massive Subcutaneous Emphysema

To the Editor:

In the August 1992 issue of Chest, Herlan et al1 presented several cases of massive subcutaneous emphysema and advocated subclavicular incisions as the treatment of choice. Although placement of multiple incisions in the skin and subcutaneous tissue has had some advocates in the past, this form of treatment has not proved generally successful or acceptable. Fortunately, subcutaneous emphysema rarely adversely affects the patient's physiologic functioning, is usually self-limited, and rarely requires surgical treatment.

As the authors noted, the source of air is usually from the respiratory tract; more rarely, it is from a hollow organ, such as the esophagus. The emphysema is usually caused by air being forced from a reservoir in the chest into the interstitial tissue by the cough mechanism. The effectiveness of the latter depends upon the generated pressure and its duration. Whether the air is from a leaking alveolus, the bronchial tree, the esophagus, or the pleural cavity, it is forced into the subcutaneous tissue by the force of the cough, which is preceded by a rise in pressure against the closed glottis. In severe cases, it is most important to control the cause by limiting intrathoracic pressure. Venting the interstitial air is only locally effective. However, tracheostomy and emergency intubation limit the buildup of pressure by preventing closure of the glottis. Leaving the neck wound open will aid in venting the neck and mediastinum. This was advocated by Lindskog many years ago, as...
we noted in an extensive summary of the pathogenesis and treatment of severe mediastinal emphysema. I do not believe that there is any new evidence to alter our recommendations.

During our investigations we discovered another occurrence, which has rarely been mentioned as a consequence of barotrauma. We could invariably produce fatal air embolism in animal experiments by injecting air into the tracheobronchial tree under high pressure.

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REFERENCES

Discordance Between Cardiopulmonary Physiology and Physical Therapy

To the Editor:

As physiotherapists working in the area of respiratory care, we read with interest the article by Dean and Ross,1 which appeared in the June 1992 issue of Chest. Lively discussions were generated by the various issues raised in the article. Since at our hospital we also see breathing exercises, positioning, and patient mobilization as primary interventions for optimizing a patient's respiratory status, it is gratifying to see support for these measures put forth by colleagues in other centers.

Our only concern about the article is that readers may be left with the impression that most physiotherapists continue to focus on improving ventilation with secretion removal techniques. This does not reflect clinical practice at our facility, and has not for some years. As a result, it is necessary that we continue to keep other professions informed of developments in clinical practice so that total patient care can be maximized. We look forward to future publications by Ms. Dean and her associates.

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REFERENCE
1 Dean E, Ross J. Discordance between cardiopulmonary physiology and physical therapy: toward a rational basis for practice. Chest 1992; 101:1694-98

To the Editor:

We appreciate the response by Lewis et al to our recent article on the discordance between cardiopulmonary physiology and physical therapy and the implications for practice. We would like to make two points in response to their letter.

First, although Lewis and her colleagues appear to be sensitive to the need to enhance the efficacy of cardiopulmonary physical therapy and to have made strides in that direction at their institution, a consideration of the state of practice has to be based on that reflected by the physical therapy and medical literature rather than individual institutions. The principal sources of what constitutes the basis of treatment in a specialty may be debatable. One could argue, however, that an examination of those textbooks commonly selected for physical therapy undergraduate education2 and medical handbooks3 would be a reasonable indicator. For the most part, the basis for practice outlined in such texts is consistent with our perception after having lectured extensively nationally and internationally to physical therapists and other health-care team members. Specifically, classic procedures, such as positioning for postural drainage, breathing exercises, and manual techniques continue to be a main thrust in these textbooks and are frequently viewed as the essence of cardiopulmonary physical therapy within the profession and by other health-care colleagues. These textbooks, however, are notably deficient in topics that the physiology literature supports as being of primary importance—the application of body positioning to enhance ventilation and perfusion and their matching (vs postural drainage alone) and mobilization as a primary means of enhancing oxygen transport (vs improving long-term functional work capacity and avoiding the negative consequences of bed rest).

Second, augmenting the knowledge base of physical therapists is tantamount to aligning practice with the physiologic and scientific literature and educating other health-care practitioners about the limitations and adverse effects of time-honored chest physical therapy procedures. From our joint experience and discussion with many therapists, including those who are considered expert in the specialty, familiarity with fundamental physiologic concepts regarding heart-lung function and interaction is frequently lacking (eg, the determinants of the distribution of ventilation and perfusion and using these as a basis for prescribing body positioning to optimize arterial oxygenation and the fundamental effects of low-intensity mobilization on cardiopulmonary function and the use of prescriptive mobilization to enhance such function even in the most critically ill patient).

We are gratified that a growing number of physical therapists have been recognizing the need for change within the cardiopulmonary specialty and that strides are being made in determining the direction of that change. Factors such as the demand for clinical efficacy based on the need for cost-effective health care and ethical considerations should expedite these changes. Whether these changes, however, can be integrated into practice soon enough to prevent and reverse the chronic erosion of the provision of cardiopulmonary physical therapy in the health-care delivery system remains to be seen.

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REFERENCES