This study is particularly relevant today in the age of managed care and capitation of fees because it shows that the diagnosis of an exudate can be made with only two tests done on pleural fluid alone rather that two tests on pleural fluid and two tests on serum concomitantly drawn. It is significantly cheaper to obtain pleural fluid LDH and cholesterol ($45.00 at Indiana University) than pleural fluid and serum LDH, and protein ($90.00). It is simpler because only pleural fluid is drawn, and there is no need for blood to be drawn via venipuncture at the time of thoracentesis. Importantly, it increases the sensitivity and specificity of the results. The major change in these criteria is the elimination of serum/pleural fluid protein as a criteria, because inclusion of protein markedly decreased the specificity of the diagnosis. Protein (particularly albumin) permeability of the pleura appears to fluctuate widely, while cholesterol, a larger molecule, does not respond as easily to fluxes in osmotic gradients.

This study should change our clinical practice in the diagnosis of pleural effusions. However, these changes are notoriously slow and ingrained ideas will take time to evolve. The change is simply a modification of the criteria established over 2 decades ago. These criteria have withstood the test of time but should be amended to reflect new information and allow for further refinement in the light of cost management and improved specificity.

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Clinical Economics Through the Kaleidoscope

Although clinical thinking is an invisible process, it is the only way to give visible shape to the data gathered. In this issue of CHEST (see page 1264), Colice and colleagues remind us that appropriate application of a predefined set of clinical criteria (history, physical examination, and standard hematologic and chemistry profiles) before cranial CT in patients with lung cancer has a very high negative predictive value (.97 or greater). Just as looking through a kaleidoscope from the narrow end gives the best images, studies designed to approach a testing process like cranial CT with the initial focus on the patient give us the best estimate of diagnostic adequacy or sufficiency. The authors have shown that the pursuit of diagnostic certainty to the point where the rare exception (unsuspected brain metastasis) is the operational paradigm, is not beneficial either from a risk or cost benefit standpoint.

In order to ascribe benefit, many studies of imaging modalities like cranial CT have analyzed their results looking back from the testing procedure toward the patient. This attempt is similar to looking through the wide end of a kaleidoscope. There is no clear image produced. Emphasis is often given only to presence or absence of CNS symptoms. Nonorgan-specific signs and symptoms suggestive of metastases are frequently not described in these studies. The performance status for the patient (ie, the Karnofsky score) is seldom included. Can the patient actually tolerate any treatment for the intracranial finding? The costs engendered by investigation of false-positive results are rarely mentioned. This approach overemphasizes the value of the technological test for complete diagnosis even when the clinical circumstances and treatment options are not actually complex.

Widespread use of economic analysis as part of the development of pharmaceutical, biotechnologic, and medical devices is relatively new. The in-depth peer review of articles on economic analysis requires special expertise. The task force on principles for economic analysis of health-care technology has just published guidelines to consider when evaluating the merit of these publications. Cost-effectiveness analysis incorporates both cost and effect. It measures the net cost of providing a service (expenditures minus savings) as well as the outcomes obtained. Almost all clinicians would agree that, at some point, the extra money spent for tiny improvements in clinical outcomes is not worthwhile and represents inappropriate practice. The study by Colice and colleagues in this issue compared two strategies in patients with lung cancer—CT first and no CT (CT-deferred). The authors have carefully described how important the influence of disease prevalence and prior probability should be in the decision to obtain cranial CT. They also provide appropriate emphasis on test sequencing. It is essential to ask if the cranial CT scan can make actual measurable difference in staging or treatment. It is only through this process that we can assess consequences of false-positive and false-negative results and arrive at a beneficial concept of a testing threshold.
Dr. Ubel has expressed a fear that medical technology allows physicians to act as if we no longer need to talk to patients or each other. If we are going to convince the “next generation” of physicians that it remains essential to talk to patients and ascertain their physical findings, the principles of economic analysis must be incorporated in our medical teaching rounds to clarify rather than obscure the proper application of technology. The time-honored values of the history, physical examination, logical medical reasoning, and proper test sequencing will not be diminished by cost analysis, but rather the brilliance of the image at the other end of the kaleidoscope will be enhanced. The article by Colice and colleagues is a definitive step in the right direction.

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Interstitial Pulmonary Fibrosis and Lung Cancer

Diffuse interstitial pulmonary fibrosis (DIPF), the prototypic restrictive lung disorder, has been long recognized as a chronic inflammatory process characterized by abnormal collagen deposition. In the majority of cases, the cause of DIPF remains idiopathic—Scadding’s “cryptogenic fibrosing alveolitis.”

In this issue of CHEST, Mizushima and Kobayashi (see page 1272) present an exhaustive review of the Japanese literature on DIPF patients who have developed lung cancer. Their primary intent was to identify clinical and pathologic characteristics of multicentric bronchogenic carcinomas, of both synchronous and metachronous varieties in this population. This was accomplished by comparison of the multicentric tumor group, with that of DIPF patients with cancer of a solitary lung, and of a massive historic group of bronchogenic carcinomas of all types in Japanese patients.

Perhaps the most important message conveyed by this scholarly and encyclopedic review is not that of the particular clinical features and cell types of these rare multicentric tumors in DIPF patients. Since the classic description of the association of lung cancer with cryptogenic fibrosing alveolitis by Turner-Warwick et al, there has been too little attention given to the potential in this setting for development of this usually fatal neoplasm. Most current epidemiologic treatises on predisposing conditions for lung cancer give minor discussion, inferring questionable acceptance, of the important risk factor of underlying DIPF. Comments are frequent regarding potential for malignant transformations in interstitial fibroses of known etiology such as pulmonary asbestosis and “scleroderma lung,” yet the inherent danger in the most common of interstitial disorders, that of the idiopathic variety, is largely ignored.

In the Mizushima and Kobayashi article, we are reminded of the difficulty of identifying lung cancer in DIPF patients because of its usual peripheral location and preference for the lower lobes, where the chronic inflammatory process is most evident radiographically. As opposed to the rare “scar carcinoma” described by Auerbach et al as developing in localized underlying conditions such as infarcts or granulomas, and usually of adenocarcinoma type, the frequency distribution of cell types in DIPF patients is similar to that of the “universe” of lung cancer.

Additional to problems in diagnosis of bronchogenic carcinoma in this setting are the management complications imposed by decreased potential for surgical excision due to major underlying impairment of pulmonary function, and the predictable chronic toxicity of therapeutic irradiation with preexistent diffuse pulmonary fibrosis. In patients with DIPF, our most important tools are: (1) prevention relative to the usual causative agent of lung cancer—cigarette smoking, which was highly prevalent in this present report, and (2) vigilant screening, by clinical and roentgenographic means, in this special high-risk population.

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