Pulmonary Arterial Hypertension and Thyroid Disease

To the Editor:

We have been following with interest the articles by Curnock et al.1 and Nakchbandi et al.2 commenting on the association of thyroid disease and primary pulmonary hypertension (PPH). We would like to draw attention to our recent observations of thyroid disease and pulmonary artery hypertension (PAH).3

Although an increased prevalence of thyroid disease has been reported in patients with PAH, whether long-term treatment with prostacyclin (PGI₂) plays a role is unclear. We performed a retrospective analysis of thyroid function studies in 134 adults (112 with PPH and 22 with connective tissue disease [CTD]) with PAH or PAH associated with CTD, and in 78 children with PPH (Fig. 1). The objective of our study was to determine if long-term therapy with PGI₂ “induces” or “unmasks” thyroid disease in patients with PAH. Twenty of the 26 adult patients (16 with PPH and 10 with CTD) with thyroid disease were treated with long-term PGI₂ therapy, and 11 patients (all with PPH) of these 20 developed thyroid disease after starting PGI₂ therapy. Five of these 11 patients had thyrotoxicosis at the time of evaluation. The remaining nine patients with thyroid disease prior to starting long-term PGI₂ therapy were all hypothyroid, as were the six patients who were never treated with PGI₂. Eight of the 78 PPH children had thyroid disease, and 6 of the 8 children developed the disease after starting PGI₂.

Although our data on prevalence of patients with hypothyroidism and PPH (9% in adults and 6.5% in children) are similar to findings in previously published reports, prior reports of hyperthyroidism with PPH have only included single case reports4 and one case series of four patients with PAH in whom the PAH resolved in all four patients when their hyperthyroidism was treated.5 The increased occurrence in our study of hyperthyroid disease in PPH patients receiving long-term PGI₂ therapy raises the possibility that PGI₂ treat-

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**Figure 1.** Results of thyroid function studies. M = male; F = female; CREST = calcinosis, Reynaud’s syndrome, esophageal motility disorders, scleroderma, and telangiectasia; Labs = laboratory findings; SLE = systemic lupus erythematosus; TSH = thyroid stimulating hormone; T₄=thyroxine.
Elastic Recoil of Lung and Lung Reduction Surgery

To the Editor:

At a recent meeting of the American College of Chest Physicians in San Francisco in October, there were several sessions concerning lung volume reduction surgery. In two of these sessions that I attended, the concept of emphysematous lung “bulging out the chest wall and pushing down the diaphragms and even compressing the heart” was discussed by surgeons and pulmonologists present. The beneficial effect of the surgery was thought to be due to “removal of the bulging emphysematous lung to allow good lung to expand and to allow the chest to assume a less distended position and the diaphragms to ascend once the downward pressure by the bulging lung was relieved.”

Indeed, this does happen, but for an entirely different reason. It has to do with retractile elastic recoil of the lung being opposed by the expansive force of the chest wall. When these two opposing forces equal one another and cancel out, the diaphragms come to rest.

In emphysema, the loss of elastic recoil of the lung allows the chest wall to expand and hence the diaphragm becomes low. Now when the surgeon removes the areas of emphysematous lung, the elastic recoil increases, the chest wall is drawn in, and the diaphragm rises. This increase in elastic recoil of the lung also keeps the airways open longer during expiration, and they become larger on inspiration, improving ventilation/perfusion ratios and reducing the airway’s resistance and work of breathing.

Another analogy is that of a rubber band with several flabby sections in it. If these sections are removed, the rubber band has better elastic recoil.

To appreciate the expansive qualities of the chest wall, consider the following: if a pneumothorax is present (nontension, noncommunicating) and the chest wall is opened, air rushes in as the chest wall expands.

One of the surgeons at the meeting, who stressed the forceful expansile properties of the emphysematous lung pushing down the diaphragm, claimed support for his theory by observing the bulging of the emphysematous lung through a thoracotomy incision at the time of lung volume reduction surgery. When this point of view was presented to Dr. Jerry Mead during his “Distinguished Lecture in Physiology—Thoracic Kinetics,” he thought this was due to the pressure involved in the administration of the anesthesia.


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A Survey of the Use of Herbal Agents Among Philadelphia Veterans Affairs Medical Center Pulmonary Outpatients

To the Editor:

Herbal products are used by as many as 20 to 60% of patients in a variety of practice settings, both in the United States and abroad.1,2 While the efficacy of many of these agents has not been demonstrated in scientifically rigorous trials, serious toxicity has occasionally been described.3,4 However, many health-care providers do not specifically ask patients about use of these agents, and therefore may not be cognizant of possible toxicities and drug interactions between herbal products and “conventional” agents being administered at the same time. In pulmonary medicine, for example, particular concern has recently focused on an ephedra-containing dietary supplement that may have triggered cardiac arrest in an asthmatic patient receiving albuterol and theophylline.5

To some extent, the use of herbal products may be fueled by medically sophisticated or affluent patients, perhaps in concert with Internet access.1 Meanwhile, the frequency and importance of the use of herbal remedies in less affluent, urban populations, and in federal medical facilities is poorly characterized. Therefore, a prospective survey was conducted of patients in a pulmonary outpatient clinic at the Philadelphia Veterans Affairs Medical Center (VAMC). The purpose was to describe the frequency of herbal drug use and to assess the possibility of potentially dangerous herbal agent-pulmonary drug interactions or pulmonary toxicity from herbal agents in this setting.

One hundred twenty consecutive veterans attending an outpatient pulmonary clinic staffed by a single practitioner at the Philadelphia VAMC between June 1, 2000, and October 15, 2000, were queried regarding use of herbal products. The clinic serves the Philadelphia VAMC, a teaching affiliate of the University of Pennsylvania located in West Philadelphia. The vast majority of its patients are residents of Philadelphia, although 1 to 5% are referrals from VAMCs in Coatesville, PA, and Wilmington, DE.

The cohort was composed of 117 men and 3 women, 66 African Americans, and 54 whites. The mean age was 63.7 years (SD, 14 years). The highest level of education achieved was ninth grade or

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