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12/8/71009

Systemic and venous connection in asplenia syndrome

To the Editor:

We read with interest the stimulating and useful paper of Rubino and associates¹ on systemic and venous connection in asplenia syndrome.

Even in our angiocardigraphic series we² noted the correlation between atresia of the pulmonary valve and obstruction of the pulmonary venous connection. Moreover, we³ reported the prevalence of bilateral ductus arteriosus in this subgroup of patients.

The study of Rubino and colleagues¹ demonstrates the great variability in the site and mode of connection of the pulmonary and systemic veins in this syndrome. To underline this concept, we would like to report the unique features observed in a patient from our angiographic series,² which were confirmed at autopsy.

This patient had visceral heterotaxy with asplenia, levocardia, single atrium, complete atrioventricular canal with right ventricular dominance, L-ventricular loop, L-transposition of the great arteries, and pulmonary atresia. Absence of the inferior vena cava with azygos continua-

tion into the unilateral right superior vena cava was noted. In addition, total anomalous pulmonary venous connection into the azygos vein was present, so that the entire systemic and pulmonary venous drainages (except the suprahepatic and coronary veins) reached the heart by the unilateral superior vena cava.

An accurate preoperative assessment of systemic and pulmonary connections is essential for the surgical treatment of patients with asplenia syndrome. Despite the progresses of echocardiography, we believe that angiocardigraphic study is still mandatory in these children.

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Does video-assisted thoracic surgery disseminate tumor?

To the Editor:

In response to the brief communication by Dr. Buhr and colleagues on tumor dissemination after thoracoscopic resection for lung cancer (*J Thorac Cardiovasc Surg* 1995;110:855-6), several comments seem appropriate.

Video-assisted thoracic surgery (VATS) and traditional thoracoscopy are two different and separate operative techniques.¹ Using the terms interchangeably is confusing.

Contrary to traditional thoracoscopy being "rarely used" for cancer, in our experience it was being used frequently for cancer more than 25 years ago.² Currently, we have used VATS for more than 600 hundred patients with cancer. This series includes more than 100 lobectomies during a 5-year period.

In case 1 of the article by Buhr and associates, if a 1.5 cm lesion was cleanly "wedged" by stapling with sufficient margins sealed by staples, are the authors suggesting that the tumor cells in the pleural lavage resulted from that procedure? Maybe this tumor was already hematogenously disseminating and found reparative tissue with angiogenesis in the port site. Also, 1 year of observation is not long enough to rule out widespread metastases. Multiple metastases may become evident with more time.

Unfortunately, the best available imaging modalities usually cannot detect lesions smaller than 3 mm. Despite this small size, these "little" cancers already are mature, virulent, and lethal.

In case 2, the patient really had an *open* lobectomy and lymph node resection for a lesion with ulceration of the visceral surface. These ulcerating lesions have a notoriously poor prognosis. Many surgeons will routinely do a wedge resection of a lesion for frozen section and diagnosis at thoracotomy before resecting. Should this be avoided for fear of disseminating tumor? Even worse, some will even use needle aspiration at thoracotomy, probably dropping cells in the pleural space. I fail to see any relation between VATS and carcinomatosis when a recognized virulent lesion, with an exceedingly poor prognosis, is resected by open lobectomy.

Buhr and associates³ have reported preresectional, positive results of cytologic lavage in the open chest in the past. Might this same situation not occur with VATS? Most likely, it is the biologic characteristics of the tumor that determine this finding, not the surgical technique. Unfortunately, cancer does not follow any anatomic tissue planes consistently. Patterns of spread and metastasis have always been haphazard and unpredictable. Scientific studies are not convincing that lymph nodes play any role in improving survival.⁴

Buhr and associates have only 21 cases of malignancy, and 14 of these were metastatic. Were the two cases described in their communication from the metastatic group? Should patients with known metastatic lesions, which are disseminating, be included in reports on port implants?

In the past, surgeons frequently changed gloves and gowns and washed instruments, hoping to diminish tumor contamination. These maneuvers had minimal effect on curtailing the spread of tumor. Although some procedures seem to have the potential for spreading malignant cells, they are accepted and practiced by all surgeons. Mediastinoscopy with biopsy for malignancy has a wound implantation incidence of only 0.1% even though exposed tumor traverses the entire mediastinum and neck.⁵ Malignant cells are found in needle tracts in 89% of patients after percutaneous lung biopsy, yet chest wall implants occur in only 1 in 2,500 cases. Bronchoscopy with biopsy, esophagoscopy with biopsy, and even colonoscopy with biopsy expose an injured, traumatized, regenerating mucosa to malignant cells; however, all surgeons perform these techniques and apparently are not concerned with tumor implantation. Transhiatal esophagectomy finger fractures the tumor and then "drags" the neoplasm through the mediastinum. Survivals after radical esophagectomy by left thoracotomy, Ivor Lewis esophagectomy, or transhiatal esophagectomy are all similar at 20%.⁶

Successful tumor implantation in the laboratory requires transgenic mice.⁷ Rare and specific genetic mutations seem necessary before tumor spread and implantation can occur in human beings. Possibly, port implantation could be the first manifestation of systemic spread. In fact, after careful examination, tumor implants have been found in thoracotomy wounds. Unfortunately, in many instances other more important areas of metas-

tasis are present simultaneously, so that the finding in the wound is irrelevant.

Port implantation after VATS is a serious and complex problem that we must all study carefully so that the etiology can be determined. Simple touch implantation, making it analogous to infection, does not answer all of our questions. Possibly, implantation could be the result of unidentified and yet unknown genetic mutations representing the earliest signs of a virulent tumor that has already undergone hematogenous spread. We adamantly recommend a sealed container for the removal of all malignant tissue, even though it might not prevent this problem if the underlying cause is truly related to biologic changes.

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12/8/71920

Reply to the Editor:

Thoracoscopy and video-assisted thoracic surgery (VATS) have been characterized as minimally invasive operations. Both techniques seem to decrease operative trauma.¹⁻³ The indications for thoracoscopy and VATS, an obvious variation on the theme, continue to evolve. The growing enthusiasm for these minimally invasive surgical procedures has led to an expanded role in the diagnosis and staging of lung cancer. However, the role of thoracoscopy and VATS in the treatment of primary thoracic tumors or lung metastases is still undefined.

Chest wall metastasis (case 1 in our brief communication) or pleural carcinosis (case 2 in our brief communication) are very unusual for stage I lung cancer. In our first case we did not place the resected specimen in a bag. I think that tumor cells were squeezed into the chest wall during the extraction procedure. For this reason, 1½ years after the thoracoscopic resection, we detected a metastasis at the port site, the site of tumor extraction. After curative resection of the tumor located at the thoracic wall, the