Concurrent Sarcoidosis and Lung Cancer

To the Editor:

McNeill et al\(^1\) reported a patient whose sarcoidosis and lung cancer coexisted, raising the question of causality and, secondarily, of cause vs effect. The Ptolemaic (sarcocentric) viewpoint, advanced by Brincker and Wilbek,\(^2\) posits that the disease sarcoidosis can induce the development of solid neoplasms by an unspecified mechanism. The Copernican (oncocentric) viewpoint posits that sarcoidosis is an etiologically diverse syndrome,\(^3\) and that when systemic granulomas coexist with neoplasia, they constitute an immunologic response.\(^4\)

The following considerations favor the Copernican viewpoint:

1. Temporal sequence. Thirty-five tumor volume doublings are required to achieve a diameter of 3 cm.\(^5\) (The patient’s tumor measured 4.5 x 2.5 cm.)\(^1\) The mean tumor volume doubling time for squamous cell lung cancer is 88 days.\(^5\) Thus, since induction, about 8.5 years would be required for the cancer to attain this dimension. Assuming that induction required 5 years, the putative inciting event, intrathoracic sarcoidosis (undetected), would have had to be present for about 14 years. This seems unlikely for a military aviator in whom periodic chest radiographs are required.

2. Intratumoral granulomas, and granulomatous changes in local lymph nodes and in regional organs (eg, liver or spleen) are each acknowledged to represent responses to neoplasia. To reverse the assignment of cause and effect when systemic granulomas exist creates an unjustified and illogical discontinuity. It violates Occam’s dictum, \textit{lex parsimonioae}. It is implausible, for it assumes the existence of an impermeable barrier beyond regional organs that prevents the systemic expression of the granulomatous response.

In summary, assuming a causal relationship, it appears more likely than not that systemic granulomas are a response to the pulmonary neoplasm.

Jerome M. Reich, MD, FCCP
Earl A. Chiles Research Institute
Portland, OR

The author has reported to the ACCP that no significant conflicts of interest exist with any companies/organizations whose products or services may be discussed in this article.

\(^{©\hspace{1pt}2009\hspace{1pt}American\hspace{1pt}College\hspace{1pt}of\hspace{1pt}Chest\hspace{1pt}Physicians.\hspace{1pt}Reproduction\hspace{1pt}of\hspace{1pt}this\hspace{1pt}article\hspace{1pt}is\hspace{1pt}prohibited\hspace{1pt}without\hspace{1pt}written\hspace{1pt}permission\hspace{1pt}from\hspace{1pt}the\hspace{1pt}American\hspace{1pt}College\hspace{1pt}of\hspace{1pt}Chest\hspace{1pt}Physicians\hspace{1pt}(www.chestjournal.org/site/misc/reprints.xhtml).\hspace{1pt}Correspondence\hspace{1pt}to:\hspace{1pt}Jerome\hspace{1pt}M.\hspace{1pt}Reich,\hspace{1pt}MD,\hspace{1pt}FCCP,\hspace{1pt}Earl\hspace{1pt}A.\hspace{1pt}Chiles\hspace{1pt}Research\hspace{1pt}Institute,\hspace{1pt}5251\hspace{1pt}NE\hspace{1pt}Glisan,\hspace{1pt}Building\hspace{1pt}A,\hspace{1pt}Portland,\hspace{1pt}OR\hspace{1pt}97213-2967;\hspace{1pt}e-mail:\hspace{1pt}Reichje@dnamail.com\hspace{1pt}DOI: 10.1378/chest.09-0711\hspace{1pt}www.chestjournal.org\hspace{1pt}REFERENCES\hspace{1pt}1\hspace{1pt}McNeill\hspace{1pt}M,\hspace{1pt}Zanders\hspace{1pt}TB,\hspace{1pt}Morris\hspace{1pt}MJ.\hspace{1pt}A\hspace{1pt}49-year-old\hspace{1pt}man\hspace{1pt}with\hspace{1pt}concurrent\hspace{1pt}diagnoses\hspace{1pt}of\hspace{1pt}lung\hspace{1pt}cancer,\hspace{1pt}sarcoidosis,\hspace{1pt}and\hspace{1pt}multiple\hspace{1pt}regions\hspace{1pt}of\hspace{1pt}adenopathy\hspace{1pt}on\hspace{1pt}positron\hspace{1pt}emission\hspace{1pt}tomography.\hspace{1pt}Chest\hspace{1pt}2009;\hspace{1pt}135:546–549\hspace{1pt}2\hspace{1pt}Brincker\hspace{1pt}H,\hspace{1pt}Wilbek\hspace{1pt}E.\hspace{1pt}The\hspace{1pt}incidence\hspace{1pt}of\hspace{1pt}malignant\hspace{1pt}tumors\hspace{1pt}in\hspace{1pt}patients\hspace{1pt}with\hspace{1pt}respiratory\hspace{1pt}sarcoidosis.\hspace{1pt}Br\hspace{1pt}J\hspace{1pt}Cancer\hspace{1pt}1974;\hspace{1pt}29:247–251\hspace{1pt}3\hspace{1pt}Judson\hspace{1pt}M.\hspace{1pt}The\hspace{1pt}etiologic\hspace{1pt}agent\hspace{1pt}of\hspace{1pt}sarcoidosis:\hspace{1pt}what\hspace{1pt}if\hspace{1pt}there\hspace{1pt}isn’t\hspace{1pt}one\hspace{1pt}[editorial]?\hspace{1pt}Chest\hspace{1pt}2003;\hspace{1pt}124:6–8\hspace{1pt}4\hspace{1pt}Reich\hspace{1pt}JM.\hspace{1pt}Neoplasia\hspace{1pt}in\hspace{1pt}the\hspace{1pt}etiology\hspace{1pt}of\hspace{1pt}sarcoidosis.\hspace{1pt}Eur\hspace{1pt}J\hspace{1pt}Intern\hspace{1pt}Med\hspace{1pt}2006;\hspace{1pt}17:81–87\hspace{1pt}5\hspace{1pt}Geddes\hspace{1pt}DM.\hspace{1pt}The\hspace{1pt}natural\hspace{1pt}history\hspace{1pt}of\hspace{1pt}lung\hspace{1pt}cancer:\hspace{1pt}a\hspace{1pt}review\hspace{1pt}based\hspace{1pt}on\hspace{1pt}rates\hspace{1pt}of\hspace{1pt}tumour\hspace{1pt}growth.\hspace{1pt}Br\hspace{1pt}J\hspace{1pt}Dis\hspace{1pt}Chest\hspace{1pt}1979;\hspace{1pt}73:1–17

Sarcoidosis or Sarcoid Reaction?

To the Editor:

In the February 2009 issue of CHEST, McNeill and coworkers\(^1\) reported on the association of sarcoidosis and non-small cell lung cancer in a middle-aged man and discussed the clinical roles of CT scanning, PET scanning, endoscopic ultrasound fine-needle aspiration, and transbronchial needle aspiration in mediastinal staging. The relationship between sarcoidosis and cancer is intriguing, and epidemiologic studies\(^2\) have produced inconclusive results. Moreover nonnecrotizing granulomas have been described in patients with many types of malignancy (eg, lymphoma, testicular cancer, head and neck cancer, gastric cancer, renal cancer, and breast cancer). Granulomas have been found surrounding the primary tumor (3 to 7% of cases) or in the draining lymph nodes (4.4% of cases)\(^3\) and probably reflect an immune response to tumor antigens. Many authors refer to this finding as \textit{sarcoid reaction}. On the other hand, true sarcoidosis is a multisystem granulomatous disease mainly involving the lung and mediastinal nodes. The diagnosis requires a compatible clinicoradiologic picture, the demonstration of nonnecrotizing granulomas, and the exclusion of other causes of granulomatous inflammation.

In this interesting case,\(^1\) the diagnosis of sarcoidosis was based on the presence of granulomas in the right upper lobe near the lung cancer and in the mediastinal nodes, which were associated with 18-fluorodeoxyglucose uptake in two abdominal nodes. The authors did not report signs or symptoms consistent with systemic involvement, so the PET scan findings for the extrathoracic lymph nodes are not easily explainable. Furthermore, a chest CT scan did not show a nodular pattern with a lymphangitic distribution, which is the typical parenchymal lesion in the lung, and a PET scan revealed “numerous subcentimeter pulmonary nodules.”

I think that the available data, taken together, support a probable diagnosis of true sarcoidosis, but a tumor-associated sarcoid reaction should be taken into account. It would be important to know the histopathologic features corresponding to the pulmonary nodules pointed out by the PET scan and whether they were bilateral.
Finally, the follow-up testing of mediastinal and abdominal adenopathies following tumor resection could help to better define the nature of the association between granulomatous inflammation and cancer in this case.

**Americo Marruchella, MD, FCCP**  
Istituto Nazionale per le Malattie Infettive "L. Spallanzani"  
Rome, Italy

The author has reported to the ACCP that no significant conflicts of interest exist with any companies/organizations/works whose products or services may be discussed in this article.

© 2009 American College of Chest Physicians. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (www.chestjournal.org/site/misc/reprints.xhtml).

**Correspondence to:** Americo Marruchella, MD, FCCP, Istituto Nazionale per le Malattie Infettive, Respiratory Endoscopy Unit, Via Portuense 292, Roma 00149, Italy; e-mail: almx@libero.it  
DOI: 10.1378/chest.09-0472

**REFERENCES**


**Response**

To the Editor:

We appreciate the comments made by both Drs. Reich and Marruchella regarding our patient with the synchronous diagnosis of systemic sarcoidosis and lung cancer. The focus of our report was to highlight the challenges of correctly staging our patient with a lung malignancy and diffuse lymph node inflammation consistent with sarcoidosis. Sarcoid-like reactions (SLRs) have long been associated with malignancy and are thought to be secondary to an immunogenic response to the cancer cells. The granulomas are typically found adjacent to the tumor or lymphatic drainage route. SLRs have also been reported with metastatic breast cancer and invasive adenocarcinoma of the colon. In these cases, the patients’ mediastinal adenopathy resolved with cancer therapy. Debate remains over an increased risk of malignancy for those patients with sarcoidosis. There have been varying rates of both lung cancer and lymphoma diagnosed in sarcoid patients. Clearly our patient’s significant tobacco abuse history outweighed any marginal increased malignancy risk from potentially long-standing sarcoidosis.

Our patient demonstrated diffuse tree-in-bud opacities, mediastinal adenopathy, and invasive adenocarcinoma of the colon. In these cases, the patients’ mediastinal adenopathy resolved with cancer therapy. Debate remains over an increased risk of malignancy for those patients with sarcoidosis. There have been varying rates of both lung cancer and lymphoma diagnosed in sarcoid patients. Clearly our patient’s significant tobacco abuse history outweighed any marginal increased malignancy risk from potentially long-standing sarcoidosis.

Our patient demonstrated diffuse tree-in-bud opacities, mediastinal adenopathy, and invasive adenocarcinoma of the colon. In these cases, the patients’ mediastinal adenopathy resolved with cancer therapy. Debate remains over an increased risk of malignancy for those patients with sarcoidosis. There have been varying rates of both lung cancer and lymphoma diagnosed in sarcoid patients. Clearly our patient’s significant tobacco abuse history outweighed any marginal increased malignancy risk from potentially long-standing sarcoidosis.

**Thomas B. Zanders, DO**  
Michael Morris, MD, FCCP  
Brooke Army Medical Center  
Fort Sam Houston, TX  
Matthew McNeil, MD  
William Beaumont Army Medical Center  
El Paso, TX

The authors have reported to the ACCP that no significant conflicts of interest exist with any companies/organizations/works whose products or services may be discussed in this article.

© 2009 American College of Chest Physicians. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (www.chestjournal.org/site/misc/reprints.xhtml).

**Correspondence to:** Thomas B. Zanders, DO, Brooke Army Medical Center, Pulmonary Critical Care Medicine, 3851 Roger Brooke Dr, San Antonio, TX 78234; e-mail: thomas.zanders@amedd.army.mil  
DOI: 10.1378/chest.09-1013

**REFERENCES**


**The Use of Fospropofol During Bronchoscopy**

To the Editor:

We read in a recent issue of CHEST (January 2009) the editorial entitled ‘The Old and New of Sedation for Bronchos-