Case Report

Sarcoidosis with Pulmonary Parenchymal Involvement and Co-existent Endobronchial Carcinoid

Kanapilly Francis Magdalene
Department of Pathology, Amala Institute of Medical Sciences, Amala Nagar, Thrissur, Kerala, India

Kuwait Medical Journal 2014; 46 (1): 73 - 75

ABSTRACT

Sarcoidosis and sarcoid reactions are associated with various malignancies such as Hodgkin lymphoma (HL), acute myeloid leukemia (AML), renal cell carcinoma (RCC), *etc*. Carcinoid tumors of colon, lung and kidneys co-existing with sarcoidosis are documented. Thyroid disorders were also found along with sarcoidosis and carcinoid tumors. Most of the case reports on concurrent lung carcinoid and sarcoidosis had non-metastatic carcinoid tumor and sarcoidosis without pulmonary parenchymal involvement. This is a case report of endobronchial typical carcinoid tumor with metastasis to regional lymph nodes co-existing with sarcoidosis having stage II disease. This case study concludes that there may be an association of endobronchial carcinoid tumor and sarcoidosis.

KEY WORDS: carcinoid tumor, lymphadenopathy, sarcoidosis,

INTRODUCTION

An association of sarcoidosis and malignancy has been a topic of controversy. "Malignancy-sarcoidosis syndrome"[1] and "malignancy–lymphoma syndrome"[2] are terms used by certain investigators because of their convincing association. Carcinoid tumor of lung[3,4], colon and kidneys which are associated with sarcoidosis are documented. The reported cases of co-existent lung carcinoid and sarcoidosis were non-metastatic carcinoid with no pulmonary parenchymal involvement[3,4]. This is a rare case of typical endobronchial carcinoid with lymph node metastasis co-existing with stage II sarcoidosis.

CASE REPORT

A 50-year-old woman was admitted with gall stones for cholecystectomy. Routine preoperative chest X-ray showed a right hilar lesion. The same lesion was noticed four years ago when a preoperative chest X-ray was taken prior to the thyroidectomy for multinodular goiter. Plain and contrast helical computed tomography (CT) scan showed 37 x 35 mm soft tissue density in right lung hilum with bilateral hilar and paratracheal lymphadenopathy and irregular thickening of bronchovascular bundles. Bronchial wash and brush cytology of the endobronchial growth showed features of a neuroendocrine tumor. Suspecting regional lymph node metastasis, a right pneumonectomy with regional lymph node removal was done. Gross examination of the surgical specimen showed a grayish-yellow tumor in the right bronchus measuring 40 x 38 mm (Fig. 1A). Microscopic examination showed typical carcinoid (Fig. 1B) which was positive for synaptophysin immunohistochemically (Fig. 1C). Four of the regional lymph nodes showed metastasis (Fig. 1D). Non-caseating granulomas were present within lung parenchyma (Fig. 1E) and also found in nine regional lymph nodes (Fig. 1F). Diagnosis of sarcoidosis with carcinoid was made. On further examination, she had no extrathoracic manifestations of sarciodosis. The special stains, cultures for fungus and tuberculosis and Mantoux test were negative. The serum angiotensin-converting enzyme (ACE) level was 26.9 U/l (normal 6 - 52 U/l). The post - operative course of the patient was uneventful. On one and half years of follow-up, the patient is asymptomatic and doing well. No extrathoracic manifestations or new lesions of sarcoidosis became evident radiologically during this period.

Address correspondence to:
Dr. K.F.Magdalene, MD Pathology, Post Graduate Diploma in Family Medicine, Kodiyil House, Avittathur P.O., Thrissur, Kerala , 680 683, India, Tel: +91-9496373192, E-mail: magdalenekf@gmail.com

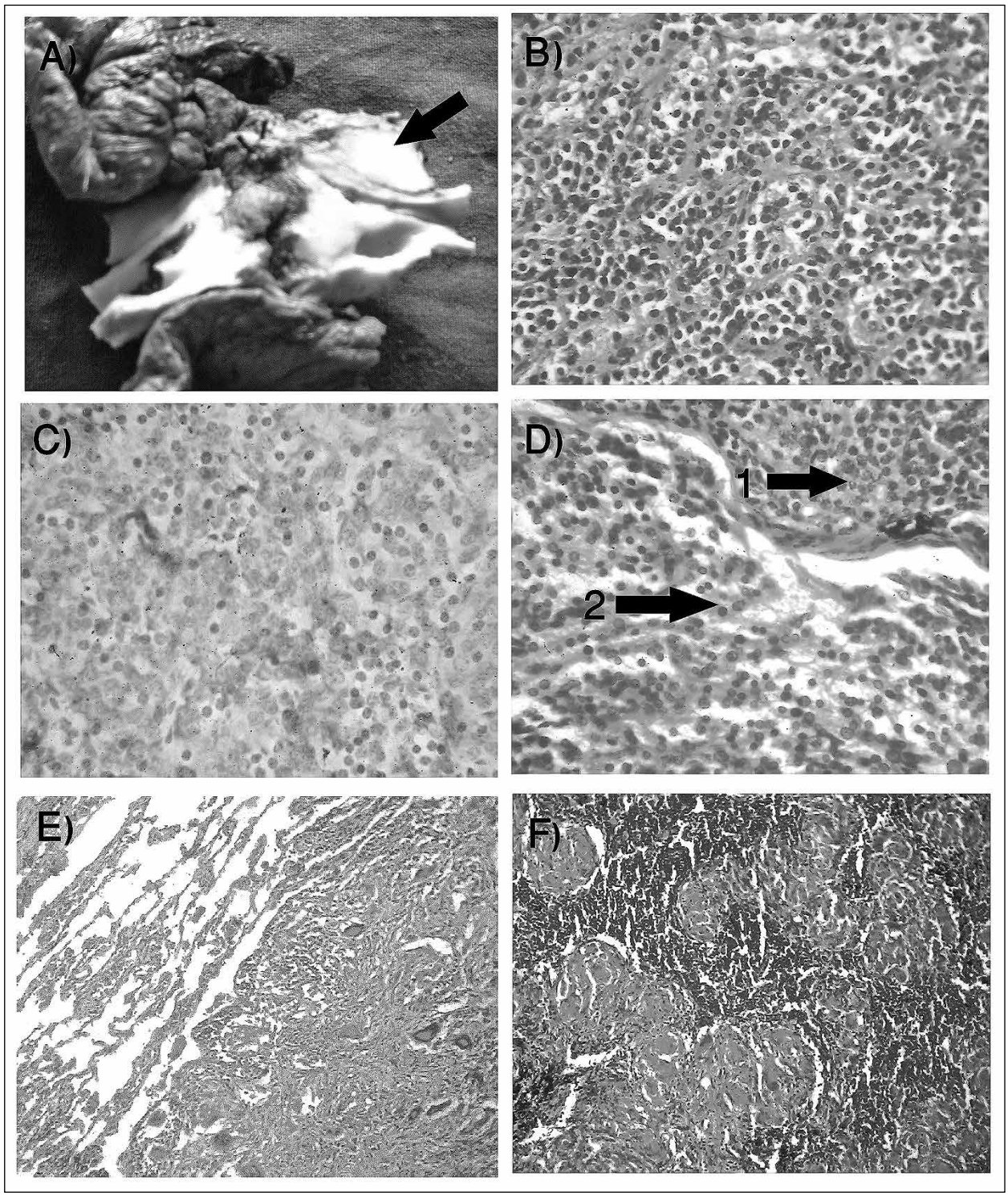

Fig. 1: A) Gross examination of grayish-yellow tumor in the right bronchus (arrow head shows tumor), **B)** Typical carcinoid tumor (H&E staining, x 40), **C)** Immunohistochemical staining of synaptophysin from pneumonectomy specimen (x 40), **D)** Regional lymph node metastasis (arrow heads, 1 lymph node, and 2 metastasis) (H&E staining, x 40), **E)** Non-caseating granuloma in lung parenchyma (H&E staining, x 10), and **F)** Regional lymph nodes with multiple non-caseating granuloma (H&E staining, x 10).

DISCUSSION

The association of sarcoidosis with various malignancies is described even though it remains controversial, whether it is true sarcoidosis or a sarcoid-like reaction. Radiologically, bilateral hilar lymphadenopathy and pulmonary parenchymal involvement are features of stage II sarcoidosis[5]. In this case, the pulmonary parenchymal involvement

could be demonstrated microscopically. Levy *et al* showed a third association with thyroid disease in three out of seven patients[3]. Multinodular goiter present in this patient can be ascribed to the embryological relationship of thyroid C cells (thyroid neuroendocrine cells) and carcinoid tumor cells both of which are postulated to originate from the neural crest[3]. Serum ACE level reflects the activity of the disease[6]. The normal serum ACE level in this patient could be because of an inactive disease. Radionuclide imaging with In-111 pentetreotide and F-18 FDG PET helps to diagnose neuroendocrine tumors and sarcoidosis. Since, carcinoid tumors are neuroendocrine tumors they can be imaged with radiolabelled somatostatin analogs. Neuroendocrine tumors express somatostatin receptors. Sarcoidosis is intensely FDG-avid. Based on different patterns of radiotracer activity seen on In-111 pentetreotide and F-18 FDG PET, it is now possible to differentiate regional metastatic carcinoid lymphadenopathy from a sarcoid lymphadenopthy[7]. However, radionuclide imaging with In-111 pentetreotide and F-18 FDG PET were not done to differentiate metastatic carcinoid lymphadenopathy from sarcoid lymphadenopathy in this case.

The possible mechanisms postulated for the disease association are 1) malignant disease may promote the onset of sarcoidosis either by causing local sarcoid reaction that progress over time or by directly initiating all the manifestations of sarcoidosis as a systemic disease process[8] and 2) immunological abnormality in sarcoidosis may in some way promote onset of neoplasms[9]. The probable mechanism in this patient could be the first cause since the patient had endobronchial carcinoid with sarcoidosis within the lung parenchyma and regional lymph nodes which can be ascribed to the persistence of endobronchial carcinoid for several years (more than four years after the first detection).

CONCLUSION

In conclusion, there may be an association between endobronchial carcinoid and sarcoidosis. The third benign thyroid disease association requires further studies. The staging process of lung carcinoid with regional lymphadenopathy should include imaging studies and biopsy confirmation to exclude sarcoidosis and sarcoid reaction.

ACKNOWLEDGMENT

The author would like to thank Dr. Agnesamma Jacob, Professor and Head, Dr. Ramani KC, Professor, Department of Pathology, for their encouraging support and valuable technical advice. The author also gratefully acknowledges the valuable help of Dr. Ajith TA, Associate Professor, Department of Biochemistry, Amala Institute of Medical Sciences, during the preparation of this manuscript.

REFERENCES

1. Suen JS, Forse MS, Hyland RH, Chan CK. The malignancy-sarcoidosis syndrome. Chest 1990; 98:1300-1302.
2. Brinker H. The sarcoidosis-lymphoma syndrome. Br J Cancer 1986; 54:467-473.
3. Levy NT, Rubin J, DeRemee RA, Aughenbaugh GL, Unni KK, Kahn MJ. Carcinoid tumors and sarcoidosis - does a link exist? Mayo Clin Proc 1997; 72:112-116.
4. Bae SY, Jeon K, Koh WJ, *et al*. Concurrent endobronchial carcinoid tumor and sarcoidosis. Intern Med 2010; 49:2609-2612.
5. Miller RH, Rosado-de-Christenson ML, McAdams HP, Fishback NF. Thoracic sarcoidosis: radiologic-pathologic correlation. Radio Graphic 1995; 15:42 l-437.
6. Liebermann J. Elevation of serum angiotensin-converting-enzyme (ACE) level in sarcoidosis. Am J Med 1975; 59:365-372.
7. Avram AM, Mackie GC, Schneider BJ, Kalemkerian GP, Shulkin BL. Differentiation between carcinoid and sarcoid with F-18 FDG PET and In-111 pentetreotide. Clin Nucl Med 2006; 31:197-200.
8. Brincker H. Sarcoid reactions in malignant tumours. Cancer Treat Rev 1986; 13:147-156.
9. Brinker H. Solid tumors proceeding or following sarcoidosis. Med Pediatr Oncol 1987; 15:82-88.