Sarcoidal reaction in lung adrenocarcinoma in 50-year old man

Abstract

A 50-year old patient was admitted to the hospital with hoarseness persisting for two weeks. Chest computed tomography revealed enlargement of lymph nodes in the aortopulmonary window. The bronchoscopy did not show any abnormalities, in transbronchial fine needle aspiration biopsy no diagnostic material was obtained. In the biopsies collected during mediastinoscopy the sarcoid granulomas were recognized. In the follow-up the computed tomography revealed a tumor mass and diagnostic thoracotomy was performed in which pulmonary adenocarcinoma was recognized. After radiotherapy the total regression was achieved. In this case sarcoid-like reaction in the course of lung cancer and the diagnostic difficulties were described.

Key words: sarcoid-like reaction, sarcoidosis, lung cancer, adenocarcinoma


Introduction

Sarcoidosis is a multiorgan granulomatous disease of unknown aetiology. It mainly affects young and middle-aged patients. The most common locations are mediastinal lymph nodes, lungs, heart, eyes, skin, nervous system, muscles, salivary glands, and bone [1, 2]. The most common form of the disease is pulmonary sarcoidosis. Within the respiratory system, sarcoid tissue can be localised in hilar and/or mediastinal lymph nodes and pulmonary parenchyma, and within the bronchial mucosa it is most commonly found at bifurcations of the bronchi [2, 3]. Sarcoidosis is a systemic disease and finding sarcoid tissue in one organ does not establish the diagnosis of sarcoidosis. Sarcoid tissue may be a reflection of an immune response to such factors as cancer, for example. The coexistence of sarcoidosis and other pulmonary diseases and sarcoid-like reactions in their course has been investigated in numerous studies [4–6]. The aim of this paper is to present a case of sarcoid-like reaction in mediastinal lymph nodes in the course of lung cancer.

Case presentation

A 50-year old male current smoker with a history of smoking 30 packet-years, previously untreated, was admitted as an elective patient to our Department in December 2007 for further evaluation of left vocal cord paresis manifested by hoarseness.

The symptoms developed suddenly, two weeks prior to the hospitalisation. In addition to the hoarseness, the patient complained of pain on swallowing. Physical examination revealed small (about 5 mm in size) and tender lymph nodes in the region of the night sternocleidomastoid musc-
Two biopsies from three lymph node groups were collected: paratracheal 4R and 4L and subcarinal 7. Histopathology revealed sarcoid tissue in the lymph nodes. This was surprising, as the initial clinical manifestations had been suggestive of cancer. However, the follow-up post-operative chest CT scan was not normal, as it revealed a tumorous mass, suggestive of cancer. The scan revealed a tumorous and nodal lesion measuring 29 × 29 mm in the aortopulmonary window and an enlargement of the following lymph nodes: right lower paratracheal (16 × 12 mm), right hilar (10 × 6 mm), and subcarinal (15 × 12 mm). Three weeks after the mediastinoscopy, diagnostic thoracotomy was performed. The tumorous and nodular mass in the aortopulmonary window was sampled for histology, which revealed primary grade 3 adenocarcinoma of the lung. The patient was referred to the Oncology Centre, where — based on the clinical, radiological, and histopathological examination — the decision to initiate radiotherapy was made. The patient completed the treatment and his current condition is good: no recurrence has been observed so far.

Discussion

There are numerous reports on the co-existence of lung cancer and sarcoidosis in the literature. Our case appropriately illustrates the significance of the problem, and our aim was to draw attention to certain aspects of the presence of sarcoid tissue around a malignant tumour.

Several possibilities are taken into account in the discussion of the co-existence of sarcoidosis and lung cancer [7]. The development of cancer in a tissue with postinflammatory changes secondary to a sarcoid process is possible, as an equivalent of cancer in the scar tissue. There may also be an immune response to a developing cancer in the form of sarcoid tissue. Another possibility is the incidental co-existence of both diseases. As regards the issue of sarcoidosis as a condition predisposing to cancer, the bibliographical data are equivocal. The first reports, dating back to the 1970s, demonstrated an increased risk of cancer in patients with sarcoidosis, which was attributed to immune abnormalities [8, 9]. This applied to stomach, intestinal, and hepatic cancer, lymphomas, and lung cancer. Brincker and Wilbek examined 2544 patients with pulmonary sarcoidosis and observed a three-fold higher risk of lung cancer [8]. Askling et al. estimated that the risk of lung cancer doubled in the first decade of follow-up of patients with sarcoidosis [9]. The results of a observation of 555

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Figure 1. Computed tomography showed enlarged mass in aortopulmonary window

le and in the right supraclavicular area. No other abnormal findings were observed.

A chest CT scan obtained prior to the hospitalisation revealed a conglomerate of enlarged lymph nodes of up to 23 mm in diameter in the aortopulmonary window and small lymph nodes of up to 12 mm in diameter in the right paratracheal region (Fig. 1). The only abnormal finding in laboratory studies was a slightly elevated ESR (to 14 mm/h, normal range: 0–10 mm/h). Upper respiratory tract endoscopy revealed left vocal cord paresis, although no cancerous growth was observed, as subsequently confirmed by a larynx CT scan. Ultrasonography revealed a nodule which was demonstrated to be of degenerative nature in subsequent cytology. The other imaging studies (CNS CT scan, abdominal ultrasound) revealed no abnormal findings.

After admission to our department the patient underwent bronchoscopy, which revealed no abnormal findings except for a bulged trachea 3 cm above the carina on the right side. A transbronchial needle biopsy of the inferior paratracheal lymph node was performed. Cytology revealed bronchial epithelial cells and lymphocytes. An attempt to puncture the lymph node in the cervical region was made, but due to the difficulty of access no cytologically evaluable material could be obtained. On ultrasound, this lymph node had not aroused any suspicion of cancer. No enlargement of this lymph node (about 5 mm) was observed during subsequent follow-up. As it was impossible to sample the aortopulmonary lymph node the patient was transferred to the Institute of Tuberculosis and Lung Diseases in Warsaw for mediastinoscopy.
patients conducted by Romer et al. were quite the opposite [10]. The study showed that cancer developed in 48 patients within 1 to 29 years after the diagnosis of sarcoidosis, clinical and statistical analysis failed to confirm an increased risk of cancer in these patients.

The development of sarcoid-like reaction around the tumour seems more likely than the co-existence of these two conditions. In a study by Steinfort et al., which analysed lymph node lesions in patients suffering from non-small cell lung cancer, a sarcoid-like reaction was observed in 8 out of 187 patients who had previously undergone thoracoscopy, lobectomy, or pneumonectomy and in 1 out of 50 patients who had undergone endobronchial ultrasound as part of the diagnostic evaluation for cancer [11]. The authors emphasised that the lymph nodes in which sarcoid tissue was found revealed no tumour cells. In our patients, we also found no tumour cells in the lymph nodes in which sarcoid tissue was identified. The course of the disease in our patient seems favourable, as we have observed over two years of recurrence-free survival. Lung cancer is a very aggressive malignancy, and local immune response, which is preserved at the initial stage of the oncogenesis, becomes considerably impaired when the tumour is clinically diagnosed [12, 13]. The presence of an organised inflammatory response around the tumour may be a reflection of preserved immunity and may be considered a favourable prognostic factor. Tumour-infiltrating lymphocytes (TILs) and tumour-associated macrophages (TAMs) are found in the commonly observed inflammatory infiltrates around tumours [12]. These cells are less frequently found in the form of an organised granulomatous tissue. Taking into account bibliographical data, one should emphasise the potential "protective" significance of the formation of granulomatous tissue around the tumour along with the antitumour effects of T helper cells and Th1 cytokines [11, 14, 15].

The clinical picture of sarcoidosis is heterogeneous [1]. There have been reports of cases resembling cancer [16, 17]. Krychniak-Soszka et al. described four patients with a radiological picture suggestive of cancer and the additional presence of round usions suspected of metastatic nature [16]. Jaroń et al. describe the diagnostic difficulties with sarcoidosis manifested as a peripheral tumour [17]. These studies demonstrate that radiological methods (even the most modern ones, including PET) are not specific and require histological confirmation. Both our case and the cases reported in the papers cited above confirm the necessity of such verification of tumorous lesions in the lungs. Clinical analysis and the appropriate assessment of radiological studies led to further evaluation resulting in the establishment of the correct diagnosis based on the examination of tissue samples. It should be emphasised here that the diagnosis of sarcoid tissue was based on histopathology, and not cytology. The diagnosis of granulomatous inflammation is based on the tissue layout and architecture, and not on the presence of its elements, as is the case with cytological examination. In this context, the case report has one more important aspect and requires a comment. In view of the increasing popularity of ultrasound-guided endobronchial needle biopsies coupled with the collection of samples for cytology, it should be emphasised that in order to confirm sarcoidosis or sarcoid tissue the appropriate method is the collection of a tissue sample (or, alternatively, a core biopsy). Only a histopathological examination makes it possible to identify the type of granulomatous tissue, while in cytological specimens elements of the granulomatous tissue can be visualised but are scattered. The elements of granulomatous tissue, both lymphocytes and myeloid cells, are present in normal and in inflamed or reactive lymph nodes.

The co-existence of lung cancer and sarcoid tissue in the lymph nodes may be considered an inflammatory reaction of additional, potentially positive prognostic significance. The identification of sarcoid tissue in a biopsy from a lesion suspected of malignant nature does not absolve the doctor from conducting further evaluation. Taking into account the common co-existence of these lesions, increased oncologic vigilance is advised, particularly in the case of patients over the age of 50.

References