Case report

Diagnostic utility of medical thoracoscopy in T cell lymphoblastic lymphoma presenting with pleural effusion

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ARTICLE INFO

Keywords: Diagnostic utility of medical thoracoscopy in T cell lymphoblastic lymphoma presenting with pleural effusion

ABSTRACT

Adult lymphoblastic lymphoma (LBL) is an aggressive form of non-Hodgkin lymphoma occurring among predominantly adolescent and young adult men, accounting for 1%-2% of all non-Hodgkin’s lymphomas. In contrast to B-LBL, T-cell LBL is much more common, accounting for up to 90% of disease in adults. Mediastinal mass, pleural and/or pericardial effusions are the major characteristics of T-LBL. We report an 27-year-old male with a pleural effusion, mediastinal lymphadenitis, and a normal hemogram. The cytology of the pleural effusion initially was lymphocytic exudative and ADA was high. For definitive diagnosis a medical thoracoscopy was done. The partial pleura showed multiple irregular nodules and thickening in sheets. It was picked and immuno cytohistopathological study revealed the following: CD3, TdT+, CD7 with Ki 67 index of 70-80%. The patient was finally diagnosed with T-LBL. He was treated with chemotherapy and is on regular follow up with resolution of effusion. This highlights the point that medical thoracoscopy is a safe and accurate diagnostic procedure for pleural diseases, and partial pleura biopsy yielded the correct diagnosis.

1. Background

Malignant pleural effusion (MPE) is presentation of many malignancies; however, the most frequent are lung and breast carcinomas, and lymphomas, followed by gastrointestinal and ovarian malignancy [1].

In ~10% of patients with undiagnosed pleural effusion, a lymphoma is finally detected [2]. MPE is observed in 10-30% of patients with Hodgkin’s lymphoma at presentation (3-5) up to 20% (7,8) of Non Hodgkin’s lymphoma. Lymphoblastic lymphoma (LBL) is a rare malignancy accounting for less than 2% of non-Hodgkin’s lymphoma (NHL) [2,3]. T-cell lymphoblastic lymphoma (T-LBL) comprises approximately 85-90% of all LBL and occurs most frequently in late childhood, adolescence, and young adulthood, with a male predominance of 2:1[1]. Although pleural effusion and mediastinal adenopathy are common signs of T-LBL, the accurate diagnosis is often a challenge in clinic because of the low positive of malignancy cells by cytological examinations of PE, or as the malignant cells may be difficult to distinguish from reactive lymphoid cells[4]. In such situations, medical thoracoscopy becomes an important investigation so that the pleural biopsies can be taken under direct visualization and it has a 90% success rate for the diagnosis of MPE[5]. In this paper, we describe a case with pleural effusions, which was diagnosed as T-cell lymphoblastic lymphoma by pleural biopsy from medical thoracoscopy. Up to now, there are very few reports about a diagnosis of T-LBL by medical thoracoscopy.

2. Case presentation

A 27-year-young man presented to our department with dry cough and shortness of breath on exertion and intermittent fever and loss of weight and appetite for one month. He denied purulent sputum, hemoptysis and arthralgia. Chest examination revealed absent breath sounds on the lower two thirds of the right hemithorax and a dull percussion note. No detectable peripheral lymphadenopathy was found. Laboratory results included normal creatinine, blood urea nitrogen, and serum electrolyte; lactate dehydrogenase (LDH), 379 U/L; alanine aminotransferase (ALT), 23U/L; aspartate aminotransferase (AST), 19 U/L; leukocyte count, 8.32 × 103/L; hemoglobin, 15.5 g/dl; platelet count, 379 × 103/L, and C-reactive protein (CRP), 43.6 mg/L. Sputum cultures were negative for bacteria, fungus, and Mycobacterium...
tuberculosis. Chest X-ray demonstrated a large right pleural effusion with a light contralateral shift of the trachea and mediastinum (Fig. 1). Chest computed tomography (CT) showed right sided moderate to massive pleural effusion with compressive collapse of underlying basal segments of right lower lobe and atelectatic consolidation of medial and lateral segments of right middle lobe. There were multiple enlarged conglomerate necrotic mediastinal lymphnodes in the prevascular, right hilar, subcarinal, paraortic, aortopulmonary and lower paratracheal stations. (Fig. 2). Chest ultrasonography revealed massive right pleural effusion with visceral pleural nodularity. (Fig. 3) Echocardiography showed minimal pericardial effusion in the right atrial region. Thoracentesis was performed and revealed exudate with lactate dehydrogenase level of 2023 U/L, ADA value of 110 U/L, and pleural fluid protein was 5.51 g/L. Pleural fluid cytology showed mesothelial cells and lymphocytes. There were no malignant cells. Pleural fluid culture was negative for \textit{M. tuberculosis}. As pleural fluid ADA and LDH level was unusually high we decided to go ahead with pleural biopsy. The medical thoracoscopy was performed under local anesthesia, cardiovascular and respiratory monitoring, in the endoscopy suite by experienced operator. The inspection of the pleura by a direct vision revealed massive hemorrhagic pleural fluid in the pleural cavity. Parietal pleura showed linear nodularity along the rib margin with occasional large big nodules with smooth/irregular margins (Fig. 4). Specimens from the parietal pleura were picked multiple times from different areas by biopsy forceps. Pleural biopsies showed malignant round cell neoplasm favoring lymphoma. Immunohistochemistry revealed tumor cells were positive for terminal deoxynucleotidyl transferase (Tdt), CD 3, CD 7 with Ki 67 index of 70–80%. Tumor cells were negative for CK, LCA, CD 20, CD 30, ALK, PAX 5. Final diagnosis was malignant lymphoproliferative lesion, in keeping with T- Lymphoblastic lymphoma. (Fig. 5). In addition, bone marrow aspirate and biopsy showed normocellular marrow with trilineage maturation. Whole body positron emission tomography (PET) scan was taken which showed diffuse heterogeneous FDG uptake seen in right pleural effusion with minimal CT detected pleural nodularity (SUV Max 2.9). There was abnormal increased FDG uptake noted in following CT detected lymph nodes: a) right upper paratracheal (SUV max 5.2) b) Right lower paratracheal (SUV Max 2.3) c) right hilar (SUV Max 3.0) d) subcarinal (SUV Max 2.8) e) multiple juxtaphrenic (SUV max 2.3) f) celiac (SUV Max 3.2). There were not any distant metastasis or lymphnodes which were FDG avid.

2.1. Treatment

The patient was transferred under Hematology and Oncology unit for further treatment. He was initiated on chemotherapy as per MCP 842 protocol. Intercostal tube was removed as the patient was started on chemotherapy.

2.2. Outcome and follow up

The follow up PET CT after 4 cycles showed complete resolution of effusion and mediastinal and abdominal lymphnodes, suggesting good response to treatment.

3. Discussion

T-LBL is a rare type of non-Hodgkin’s lymphoma, with an overall
In pleural effusion caused by lymphoma, to make a definitive diagnosis of lymphoma, it is essential to rule out other conditions where there is an increase in lymphocytes such as rheumatoid pleuritis, Q fever, brucellosis, and legionnaire’s disease [14].

In present case we did MT for confirming the diagnosis and it turned out to be T-LBL by histological and immunohistochemical methods. The patient has been started on chemotherapy and is under follow up thereafter. The presence of pleural effusion and >2 of extranodal involvement were significantly associated with worse overall survival [15]. Medical thoracoscopy has become a core diagnostic and therapeutic tool in pleural disease care [11]. It is done under local anesthesia and is less invasive, safer, better tolerated and therefore preferable, which is usually done with single entry ports, and local anesthesia in an endoscopy suite [5].

4. Conclusion

- T Cell lymphoma can present as Pleural effusion
- Pleural fluid ADA can be high in lymphoma too.
- Medical thoracoscopy can yield the diagnosis in such cases

Patient consent

The patient gave his consent for the publication of this case.

Funding sources

The authors received no funding for this work.

Contributor statement

Planning: TMS, AAM, Conduct: KP, Reporting: AN, conception and design: AM, Acquisition of data: TMS.

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