



## Case report

# Endobronchial primary large B-cell Non-Hodgkin lymphoma in HIV-infected patient in the Highly Active Antiretroviral Therapy era: Description of a case report



U. Caterino, MD PhD <sup>a,\*</sup>, O. Tambaro <sup>b</sup>, G. Palmiero <sup>b</sup>, F. Borrelli <sup>b</sup>, M. Cotugno <sup>b</sup>, G. Bonadies <sup>b</sup>

<sup>a</sup> Thoracic Endoscopic Unit, V Monaldi Hospital, Naples, Italy

<sup>b</sup> Infectious Diseases Unit, AOU Federico II, Naples, Italy

## ARTICLE INFO

## Article history:

Received 20 April 2017

Accepted 29 April 2017

## Keywords:

Human immunodeficiency virus

Non-Hodgkin lymphoma

Lymphoma–AIDS related

Pulmonary neoplasm

## ABSTRACT

We report an unusual case of endobronchial primary large B-cell Non Hodgkin Lymphoma in a HIV-infected patient in the course of effective Highly Active Antiretroviral Therapy (HAART). Diagnosis of large B-cell NHL was obtained by fiberoptic bronchoscopy (FOB) biopsies. Three cycles of R-CHOP chemotherapy (rituximab, vincristine, cyclophosphamide, hydroxydaunorubicin, prednisone) was performed and clinical and radiological remission was obtained after 3 cycles of therapy.

© 2017 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

The success of Highly Active Antiretroviral Therapy (HAART) in the setting of HIV-patient determined improvement of HIV-related immunodeficiency, although the risk of AIDS-defining NHL subtype remains elevated.

Primary pulmonary lymphoma (PPL) represents only 0.5–1% of all primary lung neoplasms [1].

The monoclonal lymphoid proliferation affecting the lung determines isolated pulmonary parenchymal disease and/or hilar and mediastinal involvement in the absence of extrathoracic disease.

The airway involvement of primary B-cell Non Hodgkin lymphoma is uncommon (less than 1% of cases) even in HIV-infected population [1–3].

Two pattern of endobronchial NHL has been reported in according of airways involvement [1–4].

Type I is characterized by diffuse submucosal airways nodules originating from hematogenous or lymphangitic vessels in the presence of systemic lymphoma and usually significant pulmonary parenchymal involvement.

Type II includes localized airway mass due to contiguous spread

of lymphoma from adjacent lymph nodes or arising de novo from bronchus associated lymphoid tissue (BALT).

We report an unusual case of primary large B-cell non Hodgkin lymphoma (NHL) in HIV-infected patient presenting as endobronchial luminal poly-lobed and vascularized mass occluding apical segment of lower lobe of lung.

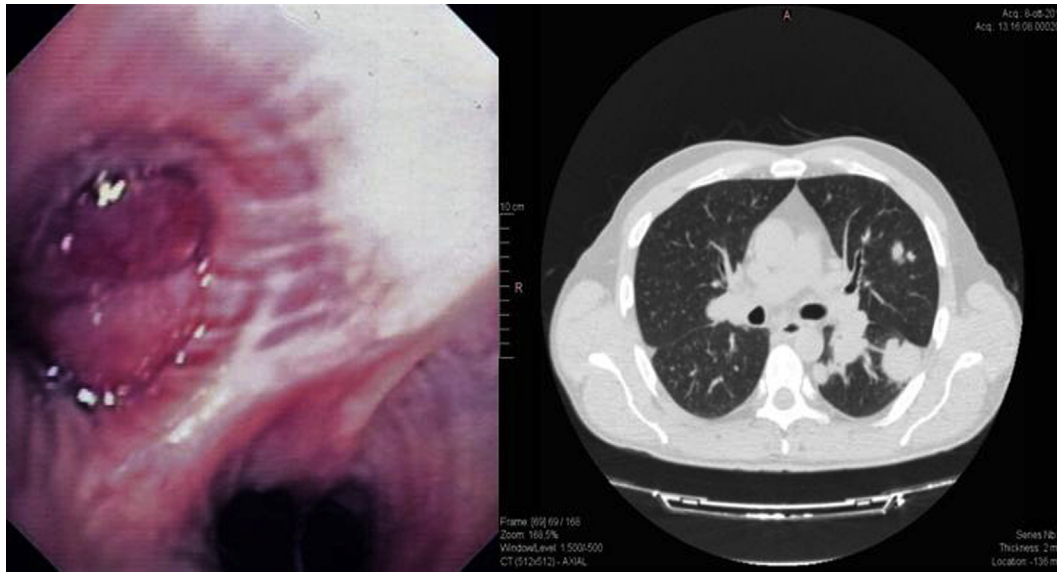
## 2. Case report

A 50 year old man HIV-infected, was admitted to our hospital with dyspnea, night sweats and hemoptysis. The patient discovered his HIV infection on April 2013. At that time, CD4<sup>+</sup> cell count was 102 cell/mmc (11%) and HAART with Tenofovir/Emtricitabine + Rilpivirine was performed achieving virologic response without immunological recovery.

He presented good health until October 2015. On presentation to the hospital, she was expectorating streaks of blood sputum. A chest physical examination revealed expiratory wheezes and rhonchi. No abnormally generalized lymphonodes were palpable. Laboratory data showed a white blood cell count of 5300/mmc with 3580/mmc neutrophils, 820/mmc lymphocytes and 810/mmc monocytes. CD4<sup>+</sup> cell count was 263/mmc (28%) with undetectable HIV-RNA (<40 UI/ml). Hemoglobin was 10,8 g/dl; the platelet count was 94000 and prothrombin time was 65,1%. The arterial blood gas analysis performed breathing room air revealed: pH 7,45;

\* Corresponding author. Thoracic Endoscopic Unit, V Monaldi Hospital, Via L.Bianchi, 80100, Naples, Italy.

E-mail address: [caterinou@yahoo.it](mailto:caterinou@yahoo.it) (U. Caterino).



**Fig. 1.** Bronchoscopy image showing endobronchial vascularized vegetation occluding the apical segmental bronchus of the left lower lobe. Chest CT scan showing hilar area and multifocal masses in the left lung.



**Fig. 2.** Bronchoscopy and Chest CT scan showing complete remission of endobronchial and pulmonary primary large B-cell non Hodgkin Lymphoma.

pCO<sub>2</sub> 38,6 mmHg; pO<sub>2</sub> 73 mmHg and HCO<sub>3</sub><sup>-</sup> 26,3 mmol/L. Other serum tests were within normal ranges.

A CT chest scan showed hilar and multifocal masses in the left lung. At fiberoptic bronchoscopy, an endoluminal poly-lobed mass was observed occluding apical branch of the left lower lobe (Fig. 1.)

Bronchial biopsies revealed on immunohistochemical analysis diagnosis of large B-cell NHL.

Six cycles of R-CHOP (rituximab, vincristine, cyclophosphamide, hydroxydaunorubicin, prednisone) chemotherapy were performed and a complete remission of endobronchial and pulmonary primary large B-cell NHL was obtained after three cycles of chemotherapy (Fig. 2).

### 3. Discussion

In the HAART era, patients with HIV infection continue to have elevated risk of AIDS-defining NHL subtypes, highlighting the contribution of moderate and severe immunosuppression to their

cause [2,3].

Unlike non-AIDS-related NHL, the lung involvement represents the most common extranodal site [3].

Tracheobronchial involvement, either primary or secondary, remains a rare event among HIV-patients with NHL and two different clinical and bronchoscopic patterns can be observed [1–8].

In patients with systemic lymphoma, multiple variable-sized nodules along the tracheobronchial tree can be observed at FOB. This bronchoscopic picture corresponding to Type 1, is related to varying degrees of submucosal lymphatic involvement from lymphatic network draining lymph from the pulmonary parenchyma into mediastinum [2–9].

Conversely solitary polypoid tumor due to direct spread of lymphoma from adjacent lymph nodes or arising de novo from bronchus-associated lymphoid tissue has been associated with airway obstruction (cough, wheezing or hemoptysis) [4–8].

This endoscopic findings matches with Type II classification of

endobronchial lymphoma.

We reported a peculiar findings of endobronchial NHL showing polylobed, erythematous and vascularized vegetation occluding the apical segmental bronchus of the left lower lobe.

If radiologically the pulmonary lymphoproliferative disease can be misdiagnosed with primary lung carcinoma, the vascularized endobronchial mass observed at FOB can mimic a diagnosis of typical endobronchial carcinoid [7].

The recent progress in antiretroviral therapy changing the spectrum and outcome of pulmonary disease has emerged the endobronchial disorders as primary site of pulmonary complication in HIV patients [2].

The need to establish a definitive diagnosis between diseases with treatment and prognosis significantly different, requires an accurate choice of diagnostic tools for adequate samples.

In according to literature, hystological biopsy results the cornerstone for establishing a definitive NHL diagnosis particularly in setting of HIV infection when bronchogenic carcinoma is suspected [5].

The fiberoptic bronchoscopy with biopsy results a valid alternative to invasive approach in case of mass invading pulmonary hilum.

In our case report, the FOB with biopsy was performed as primary diagnostic procedure for definitive diagnosis of primary pulmonary NHL.

In conclusion peculiar endobronchial finding of pulmonary NHL has been reported with the scope to accelerate the clinician's familiarity to identify the heterogeneous endobronchial pattern

(Kaposi's sarcoma, lung cancer, bacterial tracheitis, bacillary angiomatosis, and tuberculosis) in HIV patients undergoing FBO procedure [6].

### Conflict of interest

All authors disclosure no Conflict of Interest.

### References

- [1] A. Solomonov, T. Zuckerman, L. Goralnik, et al., Non-Hodgkin's lymphoma presenting as an endobronchial tumor: report of eight cases and literature review, *Am. J. Hematol.* 83 (2008) 416–419.
- [2] T.M. Gibson, L.M. Morton, M.S. Shiels, C.A. Clarke, E.A. Engels, Risk of non-Hodgkin lymphoma subtypes in HIV-infected people during the HAART era: a population-based study, *AIDS* 28 (15) (2014 Sep 24) 2313–2318.
- [3] M.D. Eisner, L.D. Kaplan, B. Herndier, The pulmonary manifestations of AIDS-related non-Hodgkin's lymphoma, *Chest* 110 (1996) 729–736.
- [4] S. Yang Tze-Yi, L. Jer En, Primary tracheal lymphoma, *J. Bronchol* 10 (2003) 292–295.
- [5] T. Kumar, M. Epstein, Y. Markovskaya, et al., Bronchoscopy and endobronchial disease in patients with human immunodeficiency virus infection, *Indian J. Chest Dis. Allied Sci.* 53 (2011) 99–105.
- [6] R.D. Gascoyne, Establishing the diagnosis of lymphoma: from initial biopsy to clinical staging, *Oncology* 12 (10 Suppl 8) (1998 Oct) 11–16.
- [7] U. Morandi, C. Casali, G. Rossi, Bronchial typical carcinoid tumors, *SeminThoracCardiovasc Surg.* 18 (3) (2006) 191–198.
- [8] A. Akca, M. Karadogan, K.D. Yilzid, et al., Endobronchial recurrence of non-Hodgkin's lymphoma mimicking foreign body aspiration, *Intervent. Med. Appl. Sci.* 7 (3) (2015) 129–131.
- [9] P. Fidias, C. Wright, N.L. Harris, et al., Primary tracheal non-Hodgkin's lymphoma. A case report and review of the literature, *Cancer* 77 (1996) 2332–2338.