**Tuberculous Adenitis with Concurrent Hodgkin Lymphoma: A Case Report**

Fahmi Yousef Khan*, Antoun Y. Kamel, Mahmoud Khalifa, Bassam Muthanna and Mohammad Adam

Department of Medicine, Hamad General Hospital, Hamad Medical Corporation, Doha, Qatar

**ARTICLE INFO**

**Article history:**
Received: 8 January 2019
Accepted: 26 May 2019

**Online:**
DOI 10.5001/omj.2020.62

**Keywords:**
Hodgkin Disease; Tuberculosis; Lymphadenopathy.

**ABSTRACT**

The concomitant occurrence of tuberculous adenitis and Hodgkin lymphoma is rare, posing a diagnostic dilemma since both have similar symptoms, such as lymphadenopathy, weight loss, fever, and night sweats. We reported such a case in a 15-year-old girl who presented with fever and neck swelling and was found to have lymphadenopathy. A biopsy of the right supraclavicular lymph node showed Reed-Sternberg cells and stained positive for acid-fast bacilli and tuberculosis culture. The patient was diagnosed with tuberculous adenitis with concurrent Hodgkin lymphoma in the same lymph node. She was started on anti-tubercular medications and chemotherapy and showed clinical improvement. This case highlights the need for suspicion in order to identify these two disorders in the same patient, since missing one of them is possible and may lead to fatal complications.

**CASE REPORT**

A 15-year-old girl, previously healthy, presented to our hospital with a three-month-history of progressive and painless right neck swelling. She also reported having low-grade fever, weight loss of 6 kg, generalized fatigue, and dry cough for the same period. Her medical history was unremarkable, and there was no history of contact with any sick person. Physical examination was only remarkable for a 5 × 5 cm, hard, non-tender, and matted right supraclavicular lymphadenopathy. Her laboratory workup were only significant for elevated lactic acid dehydrogenase (LDH = 347 U/L) and mild microcytic anemia (hemoglobin = 10.4 gm/dL). Chest X-ray showed a right para-tracheal circumscribed mass [Figure 1a]. Contrast-enhanced computer tomography (CT) of the neck showed an amalgamated mass lesion in the supraclavicular regions bilaterally (more on the right and in the superior mediastinum), while contrast-enhanced CT of the chest and abdomen showed multiple enlarged lymph nodes in the base of the neck, mediastinum, and retroperitoneum regions [Figure 2 and 3]. Purified protein derivative testing was positive (16 mm after 24 hours).

Fine needle aspiration (FNA) from the right supraclavicular lymph node revealed occasional large lymphoid-like cells, approximately 10-times larger than normal lymphocytes, and occasionally bi-lobed forms, suspicious for lymphoma. Samples of FNA also were sent for acid-fast bacilli (AFB) smear, TB-polymerase chain reaction (TB-PCR), and mycobacterial culture. As the FNA was suspicious for lymphoma, an excisional biopsy was performed on the same lymph node, and histopathological examination revealed small lymphocytes admixed
with large atypical cells, including Reed-Sternberg cells and other Hodgkin cells, consistent with classical HL of lymphocyte-rich subtype [Figure 4]. Immunohistochemistry showed strong reaction to CD15 and CD30, and was negative for CD45. Alongside, the FNA samples showed positive results for PCR and AFB and later confirmed by cultures as *Mycobacterium tuberculosis*.

The patient was diagnosed with HL and tuberculous adenitis and was started on anti-tubercular drugs as well as on chemotherapy. She received four-drug anti-tuberculous therapy (isoniazid, rifampicin, pyrazinamide, and ethambutol) for six months. In addition, she received two cycles of OEPA (vincristine, etoposide,
prednisone, and doxorubicin), followed by four cycles of COPDAC (cyclophosphamide, vincristine, prednisone, and dacarbazine) as HL treatment. The patient showed good tolerance to chemotherapy and anti-tubercular drugs. The fever subsided after two weeks, and the neck lymph nodes became unpalpable after three cycles of chemotherapy. Upon completion of therapy, follow-up chest X-ray revealed the absence of right para-tracheal circumscribed mass [Figure 1b] and the whole-body fluorodeoxyglucose-positron emission tomography scan showed no obvious uptake in previously affected lymph nodes and bone involvements indicating complete remission of the disease.

**DISCUSSION**

The association between tuberculous adenitis and HL has been discussed since the diagnosis of Hodgkin disease. The essence of this discussion was whether or not HL is a form of TB. Finally, it was concluded that HL is an independent entity, but sometimes associated with TB. This association is rare, and only six reported cases were found. To the best of our knowledge, this is the first case reported in Qatar. Table 1 describes the clinical aspects of the six reported cases as well as ours.

| Case number | Reference number | Age/ Sex | Clinical presentation | Initial diagnosis | Reason for re-investigation | Site | HL subtype | Outcome |
|-------------|------------------|----------|-----------------------|-------------------|-----------------------------|------|-------------|---------|
| 1           | Bonadonna,⁴      | 40/M     | Fever and LAD         | Tuberculous adenitis | LN size unchanged           | Axillary and mediastinum | Same inguinal LN | Cured   |
|             |                  | 49/F     | LAD                   | Tuberculous adenitis | Relapse of fever            |       | Nodular sclerosis Nodular sclerosis | Cured   |
| 2           | Costa et al,⁵    | 29/F     | Cough, hemoptysis, SOB, chest pain, LAD | Tuberculous adenitis | LN size increased | Cervical and mediastinum | Nodular sclerosis | Cured   |
| 3           | Reddy et al,⁴    | 18/M     | Anorexia, fever, HSM, LAD | HL and tuberculous adenitis | Incidental finding | Same cervical LN | Mixed cellularity | Cured   |
| 4           | Mahajan et al,⁷  | 71/F     | Fatigue and LAD       | Tuberculous adenitis | LN size increased | Same axillary LN | Lymphocytic predominant | Cured   |
| 5           | Ban et al,⁶      | 52/M     | Fatigue, SOB, cough, weight loss, night sweats, fever, LAD | HL and tuberculous adenitis | Incidental finding | Same cervical LN | Lymphocytic predominant | Unknown |
| 6           | Present case     | 15/F     | LAD, fever, weight loss, fatigue | HL and tuberculous adenitis | Incidental finding | Same supraclavicular LN | Lymphocytic predominant | Cured   |

LN: lymph node; HL: Hodgkin lymphoma; F: female; M: male; HSM: hepatosplenomegaly; LAD: lymphadenopathy; SOB: shortness of breath.

As shown in Table 1, tuberculous adenitis and HL can co-occur at any age and in both sexes, with fever being the most common symptom. The diagnosis of HL was delayed in cases 1, 2, 3, and 5 as the initial diagnosis was tuberculosis adenitis, and the patients were started on anti-TB medications, but did not improve. The reasons for re-investigating these cases are mentioned in Table 1, which showed that the simultaneous occurrence of these entities was missed and only noticed when there was relapse or failure in treatment of one of them.

If the diagnosis of one of these conditions is missed initially, this may affect the outcome. As noted in case 2, the initial response to anti-TB therapy masked and delayed the diagnosis, which may affect the stage and, therefore, the prognosis of HL, but the patient was lucky because this was not the case. In cases 3 and 5, the increase in lymph nodes size may be considered by some physicians as a paradoxical reaction during TB treatment, and they may attempt a short course of steroids that will increasingly mask the HL and may lead to serious complications. The other scenario that fortunately did not happen, what would happen if HL is diagnosed and TB is missed? The initiation of chemotherapy could cause life-threatening dissemination of TB.
Concurrent occurrence of HL and tuberculous adenitis poses a unique challenge for clinicians in terms of management and prognosis since, apart from scarce case reports, no large therapeutic studies have been conducted. However, the response to treatment and the prognosis seems to be good considering six patients were cured [Table 1].

Two theories have been proposed to explain the concomitant occurrence of TB lymphadenitis and HL. The first stated that having a malignancy like HL can suppress the cell-mediated immunity, which in turn can lead to activation of TB. The second proposed that mycobacterium TB infection can cause direct DNA damage and apoptosis inhibition, which can lead to mutations and predispose to malignancies such as lymphoma.

CONCLUSION

The concomitant onset of tuberculous adenitis and HL is rare, and a high index of clinical suspicion is needed to avoid missing the diagnosis. Hence, physicians should consider the occurrence of both conditions simultaneously when they encounter initial therapeutic failure during the treatment of HL or tuberculous adenitis.

Disclosure
The authors declared no conflicts of interest.

REFERENCES

1. Gerogianni I, Papala M, Kostikas K, Ioannou M, Karadonta AV, Gourgoulianis K. Tuberculous disseminated lymphadenopathy in an immunocompetent non-HIV patient: a case report. J Med Case Rep 2009 Dec;3:9316.

2. Muluye D, Biadgo B, Woldegerima E, Ambachew A. Prevalence of tuberculous lymphadenitis in Gondar University Hospital, Northwest Ethiopia. BMC Public Health 2013 May;13:435.

3. Khattab MA, Khan FY, Maslamani MA, Al-Khal AL, Gendy AE, Souh HA, et al. Pulmonary and extra pulmonary tuberculosis in Qatar: a first retrospective population-based study. Adv Infect Dis 2015;05:148-153.

4. Bonadonna G. Historical review of Hodgkin's disease. Br J Haematol 2000 Sep;110(3):504-511.

5. Costa LJ, Gallow CT, França FO, del Giglio A. Simultaneous occurrence of Hodgkin disease and tuberculosis: report of three cases. South Med J 2004 Jul;97(7):696-698.

6. Reddy RC, Mathew M, Parameswaran A, Narasimhan R. A case of concomitant Hodgkin's lymphoma with tuberculosis. Lung India 2014 Jan;31(1):59-62.

7. Mahajan K, Gupta G, Singh DP, Mahajan A. Simultaneous occurrence of Hodgkin's disease and tubercular lymphadenitis in the same cervical lymph node: a rare presentation. BMJ Case Rep 2016;2016.

8. Ban WH, Kang HH, Baeg MK, Kim JG, Kim HJ, Back IW, et al. Coexistence of Hodgkin’s lymphoma and tuberculosis in the same axillary lymph nodes. Tübirc Respir Dis (Seoul) 2011;70:342-346.

9. Valchev D, Mitev M, Obretenov E, Kostadinov D, Petrov D. A Combination of Hodgkin's lymphoma and tuberculosis occurred with bilateral malignant pleural effusions. Ann Case Rep 2018: ACRT-169.

10. Karakas Z, Agaoglu L, Tarvari B, Saribeyoglu E, Somer A, Guler N, et al. Pulmonary tuberculosis in children with Hodgkin's lymphoma. Hematol J 2003;4(1):78-81.

11. Kumar P, Verma A, Saini AK, Chopra P, Chakraborti PK, Singh Y, et al. Nucleoside diphosphate kinase from Mycobacterium tuberculosis cleaves single strand DNA within the human c-myc promoter in an enzyme-catalyzed reaction. Nucleic Acids Res 2005 May;33(8):2707-2714.

12. Sachdev R, Duggal R, Agrawal K, Goel S. Coexistent nodal diffuse large B-cell lymphoma with extrapulmonary tuberculosis: a rare case. Int J Surg Pathol 2016 Feb;24(1):70-72.