CASE REPORT

Simultaneous occurrence of Hodgkin's disease and tubercular lymphadenitis in the same cervical lymph node: a rare presentation

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SUMMARY

Concomitant presentation of tuberculosis (TB) and lymphoma is a rare entity. A primary malignancy such as Hodgkin's disease (HD) may cause suppression of the cell-mediated immunity, which predisposes to a concomitant TB infection. We report a case of an 18-year-old man, who presented with fever and was found to have pallor, generalised lymphadenopathy, hepatosplenomegaly, ascites and pedal oedema. Ultrasound of the abdomen revealed enlarged lymph nodes in the para-aortic and peripancreatic region. On chest contrast-enhanced CT, calcified mediastinal lymph nodes were seen. A surgical biopsy of a cervical lymph node was performed, which revealed caseous necrosis surrounded by epithelioid cells along with diffuse nodal architectural effacement by large atypical lymphoid cells. Numerous Reed Sternberg cells were also seen. Immunohistochemistry confirmed diagnosis of Hodgkin's lymphoma. The same lymph node came out to be positive for mycobacterium TB on polymerised chain reaction. The patient was given antitubercular therapy concomitantly with chemotherapy for HD, and improved with treatment.

BACKGROUND

It is rare to find a dual pathology in the form of simultaneous Hodgkin's disease (HD) and tuberculosis (TB) on biopsy of a single lymph node. Both the diseases can have a similar kind of clinical presentation and differentiating them on clinical grounds becomes extremely difficult. This case thus highlights the importance of tissue diagnosis in such situations and also emphasises that such a rare association should be considered by clinicians and pathologists, especially in cases of no response or relapse following initiation of treatment of either of these diseases.

CASE PRESENTATION

An 18-year-old man presented with multiple swellings on his neck for the past 3 months. Detailed history revealed that he also had a poor appetite and fever for the past 2 months. General physical examination showed pallor, pedal oedema and enlarged cervical, inguinal and axillary lymph nodes. Abdominal examination showed symmetrical distension of the abdomen, with hepatosplenomegaly; other system examinations were normal.

INVESTIGATIONS

Complete haemogram showed haemoglobin 6.9 g/dL, total leucocyte count 5600/mm³ with 76% neutrophils, 20% lymphocytes, 02% monocytes and 02% eosinophils, and erythrocyte sedimentation rate 120 mm in the first hour. Screening for viral markers HBsAg, anti-HCV and anti-HIV-I and II, was negative. Mantoux test, sputum for acid fast bacilli (AFB) and sputum culture results were normal, and peripheral blood film for malaria and Widal test were also found to be negative. Chest X-ray did not reveal any abnormality. Ultrasound of the abdomen revealed hepatosplenomegaly with free fluid along with multiple enlarged lymph nodes in the para-aortic and peripancreatic nodes, and at the splenic hilum. The same findings were confirmed on contrast-enhanced CT (CECT) of the abdomen (figure 1). Ascitic fluid examination was negative for malignant cells and AFB. Chest CECT showed a thickened oblique fissure and calcified nodes in the pretracheal, paratracheal, pericardial and subcarinal region (figure 2). The patient was then subjected to cervical lymph node excision biopsy. Histopathological examination showed diffuse nodal architectural effacement by large atypical lymphoid cells having enlarged nuclei and prominent nucleoli (figure 3). Numerous binucleate and multinucleate Reed Sternberg cells were seen. Immunohistochemistry of tumour cells expressed CD 3, CD 15, CD 20 and CD 30. Surprisingly, there were focal areas showing caseous necrosis surrounded by epithelioid cells forming granuloma

Figure 1 Contrast-enhanced CT of the abdomen showing para-aortic lymphadenopathy.

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Figure 2 Contrast-enhanced CT of the chest showing right paratracheal lymphadenopathy.

(figure 4). Diagnosis of TB was confirmed by real time PCR in the lymph node specimen.

TREATMENT

The patient was diagnosed as having a mixed cellularity-type of Hodgkin's lymphoma (stage III) with tubercular lymphadenitis. The patient received six cycles of chemotherapy (Adriamycin, bleomycin, vinblastine and dacarbazine) along with antitubercular therapy (ATT).

OUTCOME AND FOLLOW-UP

The patient was followed up every 2 months for the next 6 months and was found to have improved with treatment.

He became afebrile and the lymphadenopathy regressed. His appetite improved and he gained 10 kg weight post-treatment. His haemoglobin improved to 12 g/dL. Follow-up ultrasound and CT scans revealed complete regression of the hepatosplenomegaly and absence of any significant lymphadenopathy.

DISCUSSION

In India, TB and HD are common, but their simultaneous occurrence is often missed and comes to notice only when there is relapse or failure in treating one or the other entity. Misdiagnosis or delay in diagnosis of TB and HD disease may occur because of similar signs and symptoms, such as cough, fever, loss of appetite, loss of weight, night sweats, hepatosplenomegaly and mediastinal lymphadenopathy. Kaplan *et al*¹ reported on 201 patients with malignancies complicated by TB. In his report, the greater risk of TB reactivation occurred in the patients with HD (96/10 000 patients) when compared with those having other malignancies. Melero *et al*,² reporting six cases of TB in lymphoma patients (5 patients with HD), also

Figure 3 Excision biopsy showing Reed Sternberg cells.

Figure 4 Same biopsy specimen showing focal areas of caseous necrosis.

described a higher occurrence of TB in these patients when compared with the general population. Similarly Costa *et al*³ reported three cases of simultaneous occurrence of HD and TB.

In our case, simultaneous occurrence of HD and TB was found in the same lymph node specimen. The hypothesised pathology behind this simultaneous occurrence is that mycobacterium TB infection causes direct DNA damage^{4 5} and apoptosis inhibition, which increase mutagenesis of progeny cells, combined with angiogenesis; favouring tumourogenesis. Specifically, various mycobacterial cell-wall components are hypothesised to induce the production of nitric oxide⁶ and reactive oxygen species,⁷ which are involved in mutagenesis. It should also be noted that nitrative-DNA damage as well as oxidative-DNA damage have both been implicated in inflammation-related carcinogenesis.⁸ In the present case, HD appeared to only be a predisposing factor for tuberculosis, as the patient was negative for HIV and had no history of TB contact or ATT intake.

Histopathological examination is the best modality to establish diagnosis of simultaneous occurrence of both diseases. Other than this, modern imaging modalities such as fluorodeoxyglucose positron emission tomography (FDG PET), FDG PET/CT fusion, whole body MRI and multidetector CT have shown promise in staging of lymphoma but not in arriving at the diagnosis.⁹

In our case, we could not establish whether HD precipitated TB by immunosuppression or vice versa. Instead, the case gave us the impetus to consider the potential concomitant occurrence of both diseases, particularly in cases of a relapse following initial progress, or an unusual delay in radiological response to TB treatment.

Learning points

- ▶ Simultaneous occurrence of tubercular lymphadenitis and Hodgkin's disease in the same lymph node specimen is rare.
- ▶ Both diseases mimic each other clinically, so histopathological diagnosis should be considered wherever feasible.
- ▶ Concomitant occurrence should be strongly considered in cases of a relapse following initial progress, or an unusual delay in response to tuberculosis treatment.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Kaplan MH, Armstrong D, Rosen P. Tuberculosis complicating neoplastic disease. A review of 201 cases. *Cancer* 1974;33:850–8.
- 2 Melero M, Gennaro O, Dominguez C, *et al.* Tuberculosis en pacientes con linfomas. *Medicina (B Aires)* 1992;52:291–5.
- 3 Costa LP, Gallafrio CT, França FO, *et al.* Simultaneous occurrence of Hodgkin disease and tuberculosis: report of three cases. *South Med J* 2004;97:696–8.
- 4 Brooks PC, Dawson LF, Rand L, *et al.* The mycobacterium-specific gene Rv2719c is DNA damage inducible independently of RecA. *J Bacteriol* 2006;188:6034–8.
- 5 Kumar P, Verma A, Saini AK, *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;33:2707–14.
- 6 Chan ED, Chan J, Schluger NW. What is the role of nitric oxide in murine and human host defense against tuberculosis? Current knowledge. *Am J Respir Cell Mol Biol* 2001;25:606–12.
- 7 Shin DM, Yang CS, Lee JY, *et al.* Mycobacterium tuberculosis lipoprotein-induced association of TLR2 with protein kinase C zeta in lipid rafts contributes to reactive oxygen species-dependent inflammatory signalling in macrophages. *Cell Microbiol* 2008;10:1893–905.
- 8 Murata M, Thanan R, Ma N, *et al.* Role of nitrate and oxidative DNA damage in inflammation-related carcinogenesis. *J Biomed Biotechnol* 2012;2012:623019.
- 9 Silverman PM. Lymph node imaging: multidetector CT (MDCT). *Cancer Imaging* 2005;5:S57–67.

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