

CASE REPORTS

CD4 LYMPHOPENIA WITH MDR-TB AND PARADOXICAL REACTION

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ABSTRACT

Isolated Idiopathic CD4+ lymphocytopenia [ICL] is a rare clinical syndrome. Patients with ICL have a weakened immune system and are susceptible to opportunistic infections caused by bacteria, fungi, viruses and protozoa. We present an 8.5 year old HIV uninfected boy with multidrug resistant tuberculosis (MDR-TB). He was subsequently detected to have ICL. He was started on treatment with second-line anti-tuberculous therapy (ATT) and subsequently developed a paradoxical reaction on treatment. This case is presented for its rarity.

ARTICLE HISTORY

Received 08 August 2026
Accepted 01 October 2026

KEYWORDS

CD4 Lymphopenia, MDR-TB, Paradoxical Reaction.

Introduction

Isolated idiopathic CD4+ lymphocytopenia (ICL) is a rare medical syndrome in which the body produces very few CD4+ T lymphocytes.¹ People with ICL have a weakened immune system and are susceptible to opportunistic infections caused by bacteria (mycobacteria), fungus (Cryptococcus, pneumocystis, candida, histoplasma), virus (cytomegalovirus, varicella zoster, human herpes, HPV), parasites (toxoplasmosis) and protozoan (leishmaniasis).² We present an 8.5 year old HIV uninfected boy with multidrug resistant tuberculosis (MDR-TB) who was subsequently detected to have ICL. He was started on treatment with second line anti-tuberculous therapy (ATT) and subsequently developed paradoxical reaction on treatment inspite of having ICL.

Case Report

An 8½ years old boy presented with fever, abdominal adenopathy, joint pains for 8 months. An abdominal lymph node biopsy was done 2 months ago that showed acid fast bacillus on smear. He was started on first line antituberculous therapy (ATT) consisting of isoniazid (INH), rifampicin (Rif), pyrazinamide (PZA) and ethambutol (E). However, he had no response and developed cervical lymphadenopathy. On examination, weight was 21.2 kg with height of 116 cms and there was matted cervical adenopathy bilaterally. Cervical lymph node biopsy was done that showed growth of mycobacterium tuberculosis (MTB) that was resistant to isoniazid, rifampicin, pyrazinamide, streptomycin, kanamycin, ethionamide and clarithromycin. He was started on moxifloxacin, linezolid, clofazimine, cycloserine and Para-amino Salicylic acid (PAS). However, he again had increase in cervical adenopathy after 6 months. He underwent a lymph node biopsy that did not grow any MTB. He was always detected to have a low lymphocyte count. He was continued on 2nd line ATT and lymphocyte subset showed CD4 of

1008 (23%), CD8 of 1400 (32%) and CD4:CD8 of 0.72. Serum immunoglobulins were normal. HIV ELISA was negative. He received the same ATT and completed 18 months of treatment.

Discussion

MDR-TB is defined as resistance to isoniazid and rifampicin with or without resistance to other first-line drugs.³ Early diagnosis and proper treatment in tertiary care centers is most effective in management of the disease. Paradoxical reaction can occur during treatment and be misdiagnosed as disease escalation. It is defined as the clinical or radiological worsening of pre-existing tuberculosis lesions or the development of new lesions in a patient who initially improves with ATT.⁴ It is most likely due to abnormal or altered immune response.

Idiopathic CD4+ T cell lymphopenia differs from HIV infection in its immunologic characteristics and in its apparent lack of progression over time.² The mandatory criteria for the diagnosis of idiopathic CD4+ lymphocytopenia include low numbers of CD4+ cells over at least six weeks, i.e., CD4 count less than 300 cells per microliter or an altered CD4:CD8 ratio.¹ Our patient had an altered CD4:CD8 ratio and was HIV negative. The loss of these CD4+ cells is likely to be through apoptosis. Two factors related to CD4+ lymphocyte function play a role in developing ICL. First, increased activation of CD4 which may result from stimulation by an unidentified, resulting in a persistent decrease in the number of CD4+ lymphocytes. Apoptosis may be associated with enhanced expression of Fas ligands.⁵ Infections (mycobacterium) further deplete the CD4 cell pool. Therapies to increase CD4 cell counts such as the use of IL-2 in varying doses to enhance T cell immunity are available. IL-2 also plays a role in protecting the antigen-stimulated T-cells from programmed cell death (apoptosis).⁶

Due to rarity of this condition, no specific guidelines exist for prophylaxis, monitoring and treatment. Hence management is based on experience with HIV treatment. Monitoring CD4+ lymphocyte subsets every 3-4 months might be sufficient for stable patients without apparent infections.⁵

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Conclusion

Isolated CD4+ T cell lymphocytopenia increases the susceptibility to opportunistic infections. In these patients, the incidences of abnormal immune response maybe high. Paradoxical reactions can also occur in these patients.

Compliance with Ethical Standards

Funding: None

Conflict of Interest: None

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