Introduction

In India, more than 40% of the population is infected with tuberculosis (TB). In the pediatric age group, the prevalence is 1–6/1000 pediatric years.[1] The abdomen remains a major extrapulmonary site for TB. It may involve the gastrointestinal tract, peritoneum, lymph nodes, and constitutes up to 12% of extrapulmonary TB and 1–3% of the total TB cases.[2]

Unusual expansion or formation of a new tuberculous lesion despite appropriate anti-tubercular treatment is defined as a paradoxical response.[3] It is also called immune reconstitution inflammatory syndrome, but it is more appropriate to use this term for paradoxical responses in HIV seropositive patients on antiretroviral therapy.[4] It is a hindrance because it leads to change in the protocol of antituberculous therapy (ATT) and so it needs to be diagnosed early to avoid modification. In our case, the occurrence of varied paradoxical reactions viz., pericardial effusion, pleural effusion, and papilledema is evident. The patient responded to steroids and there was gradual weaning of all the paradoxical reactions.

Case Report

A 9-year-old girl presented with low-grade fever for 1 month and abdominal distension for 15 days along with labored breathing. There was loss of appetite. There was no cough or contact with TB. On examination, height was 117 cm, weight was 17 kg. She had anemia with generalized insignificant lymphadenopathy. On systemic examination, she had hepatomegaly with other systems being normal. Investigations showed a hemoglobin of 8.02 g/dl, white blood cell count of 11,100/cumm (72% polymorphs and 27% lymphocytes), erythrocyte sedimentation rate of 100 mm at end of 1 h. HIV ELISA was negative. Her mantoux test was positive. Ultrasonography abdomen showed multiple upper retroperitoneal lymphadenopathy largest being 11 cm. Computed tomography (CT) chest showed left upper lobe consolidation with cavitation with patchy opacities in the right lung and necrotic mediastinal adenopathy suggestive of TB. Liver function tests were normal. She was started on four drugs ATT consisting of isoniazid (H), rifampicin (R), ethambutol (E), and pyrazinamide (Z). One month after starting ATT, she was detected to have a pericardial rub. Her echocardiography showed 1.7 cm pericardial effusion. She was continued on same ATT, and steroids were added which were then tapered after...
2 months. At the end of 3 months of ATT, her ultrasound abdomen showed decrease in the size of adenopathy to 6 mm. At the end of 18 months of ATT, chest X-ray showed right pleural effusion with fissural effusion and left upper zone consolidation. At end of 5 months of ATT, she had gained 6 kg and on ophthalmological evaluation, she was found to have bilateral papilledema. Chest X-ray showed disappearance of effusion. She had no neurological manifestations. CT brain showed mild prominence of lateral and third ventricles. She was continued on same ATT. A repeat fundus examination was normal after 2 months. She was given ATT for 12 months in view of above manifestations. She had gained 9 kg in those 12 months and was alright on subsequent follow-up.

**Discussion**

Paradoxical reaction is more common in HIV co-infected individuals; 2–15% of HIV-negative patients infected with TB will experience paradoxical reactions during treatment. Baseline anemia, hypoalbuminemia, lymphopenia, and low lymphocyte baseline count are the risk factors in TB. It usually occurs between 4 weeks and 18 months of instillation of ATT. It is not known precisely as to how does paradoxical reaction take place and it’s a diagnostic dilemma. Killing of bacilli by effective ATT can cause the release of large amounts of tuberculoprotein and other cell wall products. Hypersensitivity to these proteins released from the dying mycobacteria will recruit lymphocytes and macrophages at the site of previously inactive tuberculous foci which enlarge and then become evident. It is a diagnostic dilemma. There is need of ruling out drug resistance, noncompliance, adverse effects of drugs and alternative diagnosis to confirm it.

Our patient had cavitatory TB along with abdominal nodes. She was started on four drugs ATT and after 1 month she developed pericardial rub due to pericardial effusion, her first paradoxical reaction. She responded to the ATT and there was weaning of retroperitoneal lymphadenopathy. She developed another paradoxical reaction in the form of pleural effusion at the end of 4th month and bilateral papilledema at the end of 5 months. She was not positive for markers of any other disease ruling out any alternative diagnosis. Gradually, there was the disappearance of pericardial and pleural effusion and also bilateral papilledema after the 7th month. She needed no modification in the antitubercular drugs and needed steroids to control the paradoxical reaction. She has taken ATT for a longer than recommended duration as paradoxical reaction requires continuation of ATT till the crisis is over. Mild to moderate paradoxical reaction resolve on its own and only serious cases require steroids. Pericardial effusion is a rare manifestation of paradoxical response in non-HIV patients.

**Conclusion**

The importance of identifying paradoxical reactions is to differentiate it from treatment failure or resistant cases and continue the ongoing treatment.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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