

Case Report

Paediatric multidrug-resistant tuberculosis in a resource-limited high TB burden setting: a case report

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ABSTRACT

MDR-TB is a matter of growing concern especially in children. The case presented here is a four years MDR-TB girl belonging to the Saharia tribe, a high TB burden ethnic group in central India. She was noticed by the project staff during contact tracing visit to the family as her father had MDR TB. The sputum smear and Cartridge- Based Nucleic Acid Amplification Test (CBNAAT) tests confirmed the diagnosis of *M. tuberculosis* with Rifampicin resistance. She was promptly initiated on shorter MDR regimen under National TB Elimination Programme (NTEP) and was monitored regularly with successful outcome at the end of the treatment. Though household contact investigations are integral part of NTEP, it is rarely done routinely in resource-limited settings, thereby missing a large number of children with TB disease. The carefully performed household contact investigation in this case, led to prompt detection and timely treatment of this MDR-TB girl in the remote setting who was otherwise missed by the routine programme surveillance. This also led to a favorable outcome. The findings emphasize the need for strengthening household contact tracing mechanism in the national TB elimination programme particularly in hard to reach and marginalised ethnic populations in the country.

Keywords: Tuberculosis, MDR-TB, Tribal, Saharia, Paediatric TB

INTRODUCTION

India has the highest burden of TB in the world both drug-sensitive and multidrug-resistant tuberculosis (MDR-TB).¹ MDR-TB in particular is a major threat to the fight against tuberculosis globally and is a matter of growing concern especially in children, as it is difficult to diagnose bacteriologically due to difficulties in collecting sputum samples in younger children. The estimated paediatric annual MDR TB incidence is between 25,000 and 32,000 comprising around 3% of all TB cases occurring in children. Of these, only 3–4% are diagnosed

and treated, resulting in high mortality among paediatric MDR-TB cases.²

In this case report, we are discussing a case of a 4 years old girl diagnosed with MDR-TB through household contact investigation. The child belongs to the Saharia community, one of the Particularly Vulnerable Tribal Groups (PVTG) in Madhya Pradesh, Central India. Tuberculosis is a major public health problem in this community.³ The present case highlights the importance of rigorous contact tracing among household contacts especially in hard-to-reach tribal areas.

CASE REPORT

The child, a 4 years old girl, had intermittent fever and cough with a history of loss of appetite and weight loss for the last six months. The case was noticed by the project staff during the contact tracing visit to the family as her father had MDR TB and who had defaulted on the treatment after taking it for initial three months. Other family members were asymptomatic. On examination of the girl, no BCG scar was seen. Sputum smear test was done at Designated Microscopy Centre (DMC) and was found positive. It was reconfirmed at District TB Centre (DTC), Sheopur by Cartridge- Based Nucleic Acid Amplification Test (CBNAAT) i.e., Xpert MTB/RIF (Cepheid, Sunnyvale). The tests confirmed the diagnosis of *M. tuberculosis* with Rifampicin resistance. She was non-reactive for HIV and her blood sugar was within normal limits. As the girl was severely anaemic with Hb at 6.8 g/dl, blood transfusion was given at the district hospital and she was referred to the Drug-Resistant TB centre (DRTB Centre) located at Gwalior. A panel of medical experts examined her and performed necessary laboratory tests which were within normal limits. Based on the clinical and laboratory tests, the treatment was initiated with a shorter MDR regimen under NTEP as per Programmatic Management of Drug-resistant Tuberculosis (PMDT) and was then referred back to the district hospital. Meanwhile her specimen was sent for Line Probe assay for detection of resistance to other drugs. Later on, she was found resistant to Isoniazide.

The condition of the girl was again reviewed at the district hospital and she was advised to take medicines under direct supervision at home which was performed by the project volunteer and was monitored by the project staff through monthly follow-up visits. The general condition of child improved during the treatment. The sputum culture report at the end of the intensive phase and the end of the treatment was negative.

Ethics approval

The study has been approved by the Institutional Ethics Committee (IEC) of ICMR-NIRTH, Jabalpur.

DISCUSSION

Drug-resistant tuberculosis especially childhood MDR-TB, is a public health challenge and a matter of great concern for TB control programs worldwide. The case presented here is an MDR-TB girl dwelling from the Saharia tribe, a high TB burden ethnic group in central India.³ MDR-TB in children is mainly due to transmission of infection from an adult source case. A wide variety of environmental and host factors play an important role in the transmission of TB infection in the household especially in under-five children who are generally confined to the house. These include intimacy of contact with the index case, sleeping arrangements, closer relationship with the case, longer duration of exposure

and sputum status of the TB patient.⁴ A very high prevalence of TB infection (20.4%) was reported among Saharia children.⁵ Despite the national policy of universal vaccination, BCG scar was seen in only 34.6% of children in Saharia community.³ The higher rate of TB infection in this tribe could be due to their socio-economic conditions and poor access to health services.

This girl child having a history of contact with an adult pulmonary MDR-TB case, her father in this case, and she might have acquired MDR-TB from him. MDR TB treatment in children is highly manageable provided they are diagnosed early and put on appropriate treatment promptly. Household contact investigation is an efficient, targeted strategy for the diagnosis of childhood tuberculosis findings suggest that over twelve times more children would be diagnosed if household contact investigations are performed for all MDR-TB adults.² However, it is rarely done routinely in resource-limited settings with a high burden of tuberculosis, thereby missing a large number of children with tuberculosis infection, resulting in childhood deaths due to TB disease. In this case, the carefully performed household contact investigation led to prompt detection of this MDR-TB girl in the remote setting that would have otherwise missed by the routine programme surveillance. This also ensured appropriate timely treatment under NTEP with a favourable outcome. The successful outcome in the present case can be attributed to strict compliance, directly observed therapy, and guided team management.

Though household contact tracing is an integral part of the NTEP, its implementation needs to be closely monitored in field conditions. In India, in the year 2018, MDR-TB cases were estimated to be 130,000 with an incidence rate of 9.6 /100,000 population.¹ However, only 66,255 MDR-TB cases were reported in 2018 indicating that almost 50 per cent of MDR-TB cases were missed during the year.⁵ To improve the identification of MDR-TB in children, household contact investigation covering all children should be implemented systematically.

The health care system missed the case presented in this report probably due to the remoteness of the tribal habitat, limited staff and increased focus of the programme on case notification and treatment. NTEP should consider providing adequate resources for effective household contact tracing and prompt treatment, especially in remote tribal areas. Further strengthening of the health care facilities and infrastructure especially in vulnerable tribal groups is the need of the hour to accomplish the ambitious goal of elimination of tuberculosis by 2025 in India.

CONCLUSION

The findings of the study emphasize the need for strengthening household contact tracing mechanism in the National TB Elimination Programme particularly in hard-

to-reach area and marginalised ethnic populations in the country.

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