



A Case Series Study to Assess the Clinical and Socio Demographic Aspects of MDR TB Clients Admitted in Selected Hospitals of Indore

Mr Rajdeep Paul¹, Dr.Madhurendra Rajput², Mr.Kuldeep Singh³, Mr.Shyam Sundar Bera⁴, Dr.Khyati Jain⁵

¹Research Scholar Malwanchal University, Indore.

²Research Supervisor, Malwanchal University, Indore.

³Research Scholar, Malwanchal University, Indore

⁴Research Scholar, Malwanchal University, Indore.

⁵Professor, People's Medical College, Bhopal.

Introduction

The World Health Organization (WHO) defines multidrug-resistant tuberculosis (MDR-TB) as resistance to isoniazid and rifampicin, with or without resistance to other anti-tuberculosis drugs. MDR-TB is a subtype of multidrug-resistant tuberculosis (MDR-TB). It is becoming a significant concern for human health on a global basis, and it presents a threat to the efforts being made to control tuberculosis. According to the most recent statistics on the monitoring of anti-TB drug resistance, it is estimated that 4.3% of newly diagnosed cases and 18% of previously treated cases of tuberculosis across the globe have rifampicin- or multidrug-resistant tuberculosis. This percentage applies to cases that have been diagnosed with tuberculosis for the first time (MDR- or RR-TB). According to estimates, there were around 700,000 newly diagnosed cases of MDR/RR-TB reported throughout the globe in 2018. In India, it is anticipated that each year there will be 1.4 lakh newly diagnosed cases of MDR-TB, with 80,000 of those cases being MDR-TB. In the United States, the number of newly diagnosed cases of MDR-TB is estimated to reach 90,000. In light of the fact that the chest X-ray (CXR) symptoms of pulmonary tuberculosis are dependent on a variety of characteristics, such as age and immunological status, identifying the influence of HIV on the CXR appearances of MDR-TB may be of some help.

Multidrug-resistant tuberculosis (also known as MDR-TB) is a condition that is becoming an increasingly significant problem as a result of inadequate treatment of drug-sensitive as well as drug-resistant tuberculosis. Both multidrug-resistant tuberculosis and regular tuberculosis may be cured; however, treatment can be prohibitively expensive, take a very long time, and require treatments that might be potentially hazardous.

There have only been a few studies done that look at the clinical and demographic features of MDR-TB. Investigating the socio demographic aspects of multidrug-resistant pulmonary tuberculosis is the goal of this study.

Methodology

This study was a hospital-based case series study that included Two hundred people who had confirmed cases of MDR pulmonary TB and had been diagnosed at one of the several hospitals in Indore. The research was carried out in selected Hospitals in Indore. Patients has been diagnosed with multidrug-resistant pulmonary tuberculosis were included in the research. The patient's record form was used to extract, from the record that was already available in the department, the patient's detailed history, socio economic demographic characteristics, clinical findings, and routine laboratory investigation results such as complete blood count, random blood sugar, and retroviral status, amongst other things. This information was taken from a record that was already available in the department.

Sputum samples were collected from all of the patients whose conditions were thought to be consistent with MDR pulmonary TB by GeneXpert. For the sake of this discussion, we will refer to all patients with Rifampicin resistance in GeneXpert as MDR patients. This is because MDR stands for multidrug-resistant.

Results

The number of persons who have been diagnosed with MDR-TB brings the total to 200. Because they refused to participate with the researchers, ten of the participants in the test group were removed from the group for further testing. The socio-demographic profile of the patients who were participating in the study showed that there were 62% men and 38% females, and that there were 74 patients who satisfied the inclusion criteria. The average age of these patients was 34.78.16 years old, and men made up 62% of the total.

It was found that 69 percent of patients were from families whose incomes were lower than the federal poverty threshold, and that 35.13 percent of patients were only from the city of Indore. Sixty-seven percent of the samples were from people working in the industrial industry, and thirty percent of the samples came from people whose families had a history of TB. The vast bulk of the sample, which accounts for 90% of the total, consists of people whose total body weight is outside of the normal range. It is estimated that 21 percent of the total 190 participants in the study represent novel cases. The total number of months spent dealing with symptoms prior to being given a diagnosis of multidrug-resistant tuberculosis varied anywhere from 9.12 ± 1.84 . Even among newly diagnosed patients, the average period of time spent suffering symptoms prior to gaining a diagnosis was 4.11 ± 0.94 months. This was the case even if the patients had been receiving treatment. Coughing was the initial symptom that was experienced by every patient in the study, making it the one that was the most frequent overall. After this, the patient started experiencing symptoms such as fever, difficulty breathing, loss of appetite, and hemoptysis in declining sequence.

A sputum pyogenic culture and sensitivity test was done on 21% of the 190 patients, and the findings showed that 10% of the samples did not show any growth, but 11% of the samples did demonstrate growth of *Klebsiella* in 5%, 3% had *Moraxella*, and 2% had *Burkholderia*.

The analysis of the patient's blood yielded the following data: the mean hemoglobin was 10.22 ± 0.91 , the ESR was 31.04 ± 14.34 , the TLC was 11990 ± 3051 , and the RBS was 124.86 ± 33.72 . These values may be found in the table below. A total of 190 people were given an HIV test, and the findings showed that just five of those patients had a positive result. The remaining patients had negative findings for the presence of AFB in their sputum, whereas 78% of the patients had positive results for the presence of AFB in their sputum.

Conclusion

The vast majority of multidrug-resistant tuberculosis cases are seen in younger people. It is necessary to have a high level of suspicion in order to diagnose pulmonary tuberculosis in patients even when the patient's sputum tests negative for acid-fast bacilli at the time of diagnosis. This is due to the fact that almost one-third of patients have negative sputum tests for acid-base bacteria at the time of diagnosis.

Reference

1. Meeting Report of the WHO Expert Consultation on the Definition of Extensively Drug-Resistant Tuberculosis. Available online: <https://www.who.int/publications-detail-redirect/meeting-report-of-the-who-expert-consultation-on-the-definition-of-extensively-drug-resistant-tuberculosis> (accessed on 17 May 2021).
2. Global Tuberculosis Report 2021. Available online: <https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2021>.
3. Fu, H.; Lewnard, J.A.; Frost, I.; Laxminarayan, R.; Arinaminpathy, N. Modelling the Global Burden of Drug-Resistant Tuberculosis Avertable by a Post-Exposure Vaccine. *Nat. Commun.* 2021, 12, 424.
4. Kendall, E.A.; Shrestha, S.; Dowdy, D.W. The Epidemiological Importance of Subclinical Tuberculosis. A Critical Reappraisal. *Am.J. Respir. Crit. Care Med.* 2021, 203, 168–174.
5. WHO Consolidated Guidelines on Tuberculosis. Module 1: Prevention—Tuberculosis Preventive Treatment; World Health Organization: Geneva, Switzerland, 2020. Available online: <https://apps.who.int/iris/bitstream/handle/10665/331170/9789240001503-eng>.
6. Andrews, J.R.; Gandhi, N.R.; Moodley, P.; Shah, N.S.; Bohlken, L.; Moll, A.P.; Pillay, M.; Friedland, G.; Sturm, A.W. Tugela FerryCare and Research Collaboration Exogenous Reinfection as a Cause of Multidrug-Resistant and Extensively Drug-Resistant Tuberculosis in Rural South Africa. *J. Infect. Dis.* 2008, 198, 1582–1589.
7. Ershova, J.V.; Volchenkov, G.V.; Kaminski, D.A.; Somova, T.R.; Kuznetsova, T.A.; Kaunetis, N.V.; Cegielski, J.P.; Kurbatova, E.V. Epidemiology of Primary Multidrug-Resistant Tuberculosis, Vladimir Region, Russia. *Emerg. Infect. Dis.* 2015, 21, 2048–2051.
8. Yang, C.; Luo, T.; Shen, X.; Wu, J.; Gan, M.; Xu, P.; Wu, Z.; Lin, S.; Tian, J.; Liu, Q.; et al. Transmission of Multidrug-Resistant *Mycobacterium Tuberculosis* in Shanghai, China: A Retrospective Observational Study Using Whole-Genome Sequencing and Epidemiological Investigation. *Lancet Infect. Dis.* 2017, 17, 275–284.
9. Das, P.; Horton, R. Tuberculosis—Getting to Zero. *Lancet* 2015, 386, 2231–2232.
10. Rangaka, M.X.; Cavalcante, S.C.; Marais, B.J.; Thim, S.; Martinson, N.A.; Swaminathan, S.; Chaisson, R.E. Controlling the Seedbeds of Tuberculosis: Diagnosis and Treatment of Tuberculosis Infection. *Lancet* 2015, 386, 2344–2353. [CrossRef]
11. Seddon, J.A.; Fred, D.; Amanullah, F.; Schaaf, H.S.; Starke, J.R.; Keshavjee, S.; Burzynski, J.; Furin, J.J.; Swaminathan, S.; Becerra, M.C. Post-Exposure Management of Multidrug-resistant Tuberculosis Contacts: Evidence-Based Recommendations; Policy Brief No. 1; Harvard Medical School Center for Global Health Delivery—Dubai: Dubai, United Arab Emirates, 2015. Available online: http://sentinel-project.org/Wp-Content/uploads/2015/11/Harvard-Policy-Brief_revised-10Nov2015.Pdf
12. Shah, N.S.; Yuen, C.M.; Heo, M.; Tolman, A.W.; Becerra, M.C. Yield of Contact Investigations in Households of Patients With Drug-Resistant Tuberculosis: Systematic Review and Meta-Analysis. *Clin. Infect. Dis.* 2014, 58, 381–391. [CrossRef] [PubMed]
13. McShane, H. Co-Infection with HIV and TB: Double Trouble. *Int. J. STD AIDS* 2005, 16, 95–100; quiz 101.
14. Marais, B.J.; Gie, R.P.; Schaaf, H.S.; Hesselting, A.C.; Obihara, C.C.; Starke, J.J.; Enarson, D.A.; Donald, P.R.; Beyers, N. The Natural History of Childhood Intra-Thoracic Tuberculosis: A Critical Review of Literature from the Pre-Chemotherapy Era. *Int. J. Tuberc. Lung Dis.* 2004, 8, 392–402