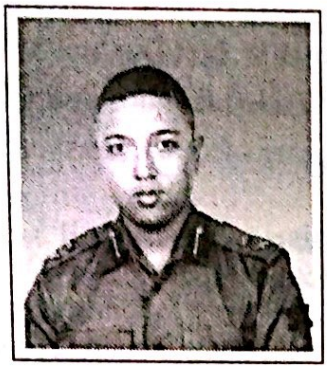
MDR TB – A CASE REPORT AND REVIEW OF THE LITERATURE



Lt. Dr. Bikash Shrestha,MBBS
Lt. COL. Dr. B. Srivastava,MD
HOD Dept of Chest Diseases

Case Report

47 years old Ex.Hav., Kancha Tamang, was admitted on 2053/7/15 with one-month history of fever, cough and weakness. He was diagnosed as a case of sputum smear positive pulmonary tuberculosis and was given 2EHRZ + 2HR. He became smear negative after 2 months. He improved clinically and radiologically and was discharged on 2053/9/16 to continue HR in home.

On 2057/4/5, he was again admitted as relapse pulmonary tuberculosis and put on EHRZ. After slow radiological and clinical improvement in four months, he was suspected to have Drug Resistant tuberculosis. By mycobacterium tuberculosis culture, he was found to have SRE resistance.Then,he was put on EHRZ + paraminosalisylic acid + ethionamide but they had to be withdrawn after one month because of their adverse effects. On 2057/ 8/15, he was put on EHRZ + ciprofloxacin + roxithromycin. After nine months of therapy, he became sputum smear negative and on 2058/5/5, he was discharged to continue medication at home.

On 2059/2/2, he was admitted for the third time for being symptomatic and smear positive again. Sensitivity test showed EHRZS resistance. On 2058/2/8, he was put on EHRZ + ciprofloxacin + roxithromycin + amikacin. After four months, he stopped secreting bacilli in his sputum. After four months, he developed ototoxicity to amikacin and hence amikacin was withdrawn. After eighteen months of intensive therapy, he was finally discharged on 2060/7/18.

After second line ATT, his tuberculosis was cured, however, he had developed severe bilateral pulmonary fibrosis, which led to cor pulmonale.

In our country, where there are more than 80,000 tuberculosis patients and 10,000 deaths each year due to tuberculosis, Multi-Drug Resistance has created a havoc by emerging as the major cause of failure of antitubercular therapy. It is equally surprising to know that Nepal has the highest rate of MDR-tuberculosis of 48%, leaving behind India (34%), USA (30%), Bolivia (15%) and Korea (15%). Along with HIV infection, MDR-Tuberculosis has proven to be the major hurdle in the path of the National Tuberculosis Programme to control tuberculosis in our country.

Definition

Tuberculosis which is resistant to one or more first line antitubercular drugs is called **Drug Resistant Tuberculosis**. **Multi Drug Resistance** (MDR) is defined as mycobacteria which are resistant to isoniazid and rifampicin.

In the environment, one out of 10^5 mycobacteria are resistant to isoniazid, one out of 10^5 mycobacteria are resistant to streptomycin, one out of 10^8 mycobacteria are resistant to rifampicin and one out of 10^6 mycobacteria are resistant to isoniazid + rifampicin.

Types of drug resistance

1. Primary resistance:

When the patient has not received any prior antitubercular therapy and is infected with drug resistant mycobacteria from the environment.

2. Initial resistance:

When it is doubtful whether the patient has received any previous antitubercular therapy or not.

3. Acquired resistance:

When the patient has received prior antitubercular therapy and becomes resistant to first line ATT due to inadequate doses or decreased compliance.

Causes of drug resestance:

1. Biological factors:

- Resistant strains of the organism.
- Acquired resistance.

2. Patient factors:

- Old age.
- Poor compliance.
- Immunocompromised state.
- Alcohol abuse.
- Poor socioeconomic status/ illiteracy.

3. Disease factors:

- Cavitatory diseases.
- Thickened pleura.

4. Iatrogenic factors:

- Inadequate dose/duration.
- Use of cross resistant drugs.

Diagnosis:

1. Clinical:

- History of contact with Drug Resistant Tuberculosis cases.
- Minimal radiological improvement.
- Sputum AFB positive 5 months after therapy.
- Fall and rise phenomenon à AFB falls initially and then rises again due to overgrowth of resistant strains.

2. Laboratory:

- MTB culture and bacterial antitubercular drugs sensitivity test.

Drugs used in resistant cases (Second line ATT):

1. Paraminosalisylic acid (150mg/kg/day)

2. Thioamides:
   a) Ethionamide (10 –20 mg/kg/day)
   b) Prothionamide (10 –20 mg/kg/day)

3. Thioacetazone (2 – 3 mg/kg/day)
4. Cycloserine (15 – 20 mg/kg/day)
5. Aminoglycosides:
   a) Amikacin (15 mg/kg/day)
   b) Kanamycin (15 mg/kg/day)
   c) Capreomycin (15 mg/kg/day)

6. Fluoro-quinolones:
   a) Ciprofloxacin (20 – 30 mg/kg/day)
   b) Ofloxacin (7.5 – 15 mg/kg/day)

7. Clofazamine (2 – 4 mg/kg/day)
8. Macrolides:
   a) Roxithromycin (5 mg/kg/day)

PrincipleS of therapy:

- Start ATT only after confirmation of diagnosis.

- When in doubt, start with first line ATT.
- Use of popular and same regimen in children and adults.
- Give drugs in adequate doses and duration.
- Use of economical,highly potent,least toxic,easily available and preferably oral drugs.
- Give drugs in single doses, preferably in the morning.
- Use first line ATT even in MDR-tuberculosis cases as some of the bacilli will be sensitive to them mostly.
- When 2nd line drugs are used, 4 or 5 of them should be used simultaneously.
- Avoid cross resistant drugs.
- Therapy should be continued for about 24 months after culture negativity.
- Monitor therapy properly bacteriologically, clinically and radiologically.

CONCLUSION:

In the context of our country, it is very difficult to treat MDR-tuberculosis cases because of obvious economical reasons. So, the focus of National Tuberculosis Programme has remained to prevent the spread of infection by treating sputum smear positive cases properly and prevent the emergence of MDR-Tuberculosis by implementing an effective Tuberculosis Programme. We, as clinicians, must give our best effort to implement the National Tuberculosis Programme effectively and save our country from this dark holocaust of tuberculosis, once and for all.

References

1. National TB Programme of Nepal (A Clinical Manual);1998:National Tuberculosis Center,Saano Thimi,Bhaktapur..
2. S.Satya Sri,Drug Resistance In Tuberculosis, Textbook Of Tuberculosis,1998;3rd Edititon: 146-155.
3. David Schlossberg,Therapy Of Multi Drug ResistantTuberculosis, Tuberculosis,Pulmonary And Extrapulmonary,1999;4th Edition:83-93.

❑❑❑