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Multidrug-resistant Tuberculosis (MDR TB)

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CASE REPORT

The patient was a 32-year-old woman with pulmonary MDR TB (Multidrug-resistant Tuberculosis). Three years ago, She suffered from the first category of pulmonary TB, but the treatment failed because the patient did not take the medication regularly. The patient was a housewife with three children, the first was a ten years old boy, the second was a seven years old girl, and the third was a four years old girl. In addition to being a housewife, the patient also worked in the garden as a laborer when the clove season had begun. The patient worked from 7 pm to 2 am. She lived in a mountainous area, in a house that was not large enough with a size of 8x10 m^2, where the house was simple and still grounded. The ventilation and lighting were still lacking, whether from the windows or the glass tiles, so the house looks humid and dark.

The patient lived with her husband, her three children, and a very old mother-in-law. The patient was the first child of 2 siblings with a history of spontaneous birth and was assisted by a birth attendant with cry spontaneously. Her mother-in-law had the same history of the disease, i.e., the first category of pulmonary TB. Her mother-in-law was treated at the primary health care facility for six months and was declared cured by the primary health care facility ten years ago. Her sister-in-law also suffered from the third category of pulmonary TB and did not regularly take the medication, and she died two years ago. The patients have a history of miscarriage once, which was during her fourth pregnancy. Her mother and father were Javanese. The patient's husband worked as a laborer on a coconut farm. So, the income was uncertain every day. The patient came from the lower socio-economic class, so the patient had health insurance for low-income people or JAMKESMAS (Health Coverage). The patient's social relationship with the community was not good because the neighborhood marginally ostracized the patient's family due to her family history which suffered from pulmonary tuberculosis. The patient was a Muslim and practice proper worship.

Biological and Psychosocial Diagnosis

The biological diagnosis for this patient was MDR TB. Psychosocial diagnosis for this patient was that She felt isolated by the community in her neighborhood. It was because some of her family members had the history of pulmonary tuberculosis as well. Lack of family attention and support in therapy for the patient was also a problem for her.

Problems

The patient realized that She has MDR TB, but the patient still did not understand the disease. Previously, the patient had suffered from tuberculosis, so she still thought that the current TB She suffered was the same as before. Even though patients currently have MDR TB with a high mortality[1] and the patient does not know this. Patient's family do not understand the dangers of MDR TB, so they did not pay much attention to the needs of patients to seek treatment at the Primary Health Center. Patient's family assume that MDR TB was the same as a normal cough. The patient's misunderstanding of the illness caused the patient not to take medication regularly when She suffered from TB category 1 (first category). TB treatment failure in these patients, causing patients to experience MDR TB.

This patient was one of the types who is challenging to continue MDR TB treatment. The problem faced by patients was that patients felt easily weak, easily tired, had a poor appetite, MDR TB treatment requires further discipline and the side effects may arise due to MDR TB medicine, and also

the lack of support received by the patient. This problem was certainly a particular concern for health workers.

Medication adherence (oral medicine and injection) was very much considered in this case. Patients must take medication at the puskesmas and be directly monitored by health workers at the puskesmas, and the injection must also be carried out by the puskesmas health worker. If the patient is careless, the drug resistance may arise again so that the type and amount of medication taken will increase and the recovery time will be longer.

Treatment activities with the PMO (*Pengawas Minum Obat*)/DOT-TB (Direct Observer Treatment of Patients with Positive Pulmonary Tuberculosis) at the puskesmas made the patient bored, so the patient often came late to the puskesmas. Especially after the initial phase was over, when she felt healthier, did not get a cough anymore, had a good appetite, and gradually gained more weight. Also, at the beginning of treatment, the patient felt She did not get support from those around her, including her husband, who was reluctant to accompany the patient to the puskesmas to take medicine. So, the patient often took motorcycle taxis. The environment that isolated the patient and her family often made patient desperate and felt useless to take medicine.

DISCUSSION

Based on epidemiological data in Indonesia, pulmonary TB is the most common infectious disease. Several OAT resistance (Resistance to anti-tuberculosis drugs) surveys that have been carried out, in 2006 in the province of Central Java showed that MDR TB cases among new cases of TB were 1.9% and MDR TB cases in previously treated TB were 17.1%[2].

MDR TB is caused by Mycobacterium tuberculosis which is resistant to isoniazid and rifampicin, which in practice cannot be cured by standard first-line therapy[3,4]. Resistance to tuberculosis drugs usually occurs through mutations due to inadequate therapy. The best predictor for MDR TB cases is a history of previous TB therapy[4]. The definitive diagnosis of MDR TB is difficult in developing countries due to the absence of adequate laboratory facilities. Tuberculosis control through a directly observed treatment (DOT) program is important in preventing the spread of MDR TB cases[5].

The resistance of M.Tuberculosa bacteria to OAT is a condition where the germs cannot be killed again with OAT. The OAT resistant TB is human-made phenomenon as a result of inadequate TB treatment, poor supply management, and drug quality, as well as transmission from OAT-resistant TB patients[6].

Diagnosis of drug-resistant TB is based on the examination of drug sensitivity tests with standard methods available in Indonesia. TB-resistant diagnosis is ascertained based on M. tuberculosis susceptibility test using conventional methods in the form of solid or liquid media, as well as using rapid test methods with GeneXpert or with LPA[7]. The patient allegedly collected three sputum specimens, namely one specimen for GeneXpert examination, and two specimens for sensitivity test culture.

MDR TB treatment consists of the initial and advanced phases for at least 18 months after culture conversion. The initial stage is "a + 4 months" where a = the first month of culture conversion is achieved, at least six months. The advanced stage is the total length of treatment reduced by the initial treatment period, where the whole treatment is "a + 18 months" and a = first month of conversion[8,9].

The 'Person-centered care' service application in this case:

MDR TB is a condition that requires long-term treatment, so the doctor must build excellent communication with the patients. The doctor must discuss with the patient about the problem, in this case, including the patient's perception that if complaints of illness have disappeared then the treatment can be stopped at any time, there is also the patient's fear of the side effects of treatment, and complications of MDR TB that the patient had not known yet. Healthcare providers (doctor) must also explore the feelings that arise because of the illness and also provide motivation and encouragement so that the patient is enthusiastic in undergoing the treatment.

Health workers need to explore the understanding of patients and families about MDR TB and what problems cause patients to be reluctant to seek treatment, including through home visits. Home visits activity can improve health services and cost-effective[10,11]. There are several types of home visits, in this case, the type of home visits that were carried out were assessment home visits, one of which was a visit to patients who had just been diagnosed with a catastrophic disease, in this case, MDR TB.

From the home visits conducted in this case, it was found that the understanding of patients and families about MDR TB was still lacking. During this time, aside from health workers, information about TB was obtained from public service advertisements. The patient also felt very disturbing from the side effects, namely vomiting and sleeping difficulty.

During the home visit, health workers explained about MDR TB transmission, the management of MDR TB medication carried out at the Puskesmas which was supervised directly by the PMOs who were scheduled alternately, the side effects of the MDR TB drugs, educate patient about the time of the control visit to the MDR referral hospital regarding treatment evaluation as well as due to side effects arising from treatment. Not to forget, health workers need to convey that MDR TB can be cured if the patient is obedient for treatment and if not appropriately treated, the patient's condition will be very deteriorating and can spread to other family members and the surrounding environment. Because the longer the patient feels physically weakened and her body becomes thinner, in the end, the patient was willing to retake medication. Patients also become more eager to seek treatment after learning that the disease can heal even

though it takes a very long time.

In this case, patients were also given an explanation by health workers from the MDR referral health facility that the treatment given was different from the previous one. The drugs took more in terms of number and type. The time to take medication is also longer than that of ordinary pulmonary TB. Regular blood tests should also be routinely carried out (i.e., hemoglobin, leukocytes, platelets, urea, creatinine, SGOT, SGPT, electrolytes, and uric acid) considering many possible side effects that can arise due to the use of MDR TB drugs.

The nutritional intake of the patient, both the amount and type of food intake, needs to be evaluated, so it is necessary to coordinate with a nutritionist. The problem of financing MDR TB therapy must be explained. As a Jamkesmas card holder, health financing is borne by the state.

Health worker must monitor the long-term MDR TB treatment added during the patient's medication directly at the puskesmas, and it will undoubtedly make the patient uncomfortable and bored. Every time the patient goes for treatment, PMO always asks the problem experienced by the patient and helps the patient deal with it, one of which is asking the side effects experienced by the patient. The doctor will assess whether these side effects can be treated at the puskesmas or should be referred to the MDR referral hospital. If it is deemed untreatable, the patient will be referred immediately. In this patient, the side effect she complained about was sleeping difficulty, so the doctor prescribed diazepam, and the patient felt more comfortable. If the side effects of the patient are still not resolved, the patient will be referred to the MDR TB referral hospital, namely Dr. Kariadi Hospital.

Among the typical effects of MDR drugs include oto-toxicity, psychiatric disorders, gastrointestinal disorders, arthralgia, epileptic seizures, peripheral neuritis, hypokalemia, hyponatremia, hypomagnesemia, hypothyroidism, hypoalbuminemia, hepatotoxicity, nephrotoxicity, and dermatological complaints[12,13].

Patients in this case report want to start treatment again because She felt that her physical fitness is decreasing. Also, health workers have also educated the patient and her family about MDR TB which is different from ordinary TB and more dangerous. The patient's knowledge and her family becomes the driving force (support system) for the patient to continue treatment, the family's support for example by routinely taking patients to the health center and helping the patient's house chores.

There are several MDR TB patients in the puskesmas besides this patient. Health workers then collaborate with village officials and village midwives to mediate puskesmas and patients to make agreements on MDR TB treatment. Patients must be present at the health center at 8 am on a scheduled day. Then these patients were asked to make an informal agreement about their treatment. Health workers also provide education to local midwives, village officials, and closest cadres. This action was done considering that the treatment time for MDR TB is quite long, which is around two years so that patients need the support and enthusiasm of the people around them.

Initially, the patient often did not want to seek treatment because the side effects she experienced, felt so heavy and it caused the patients to often came late to the puskesmas. PMO always reminded the patient via telephone or SMS so that the patient does not forget her treatment schedule. The use of telephone and SMS communication devices is a form of virtual home visits (11). If the patient was unable to go to the health center due to side effects of the medication or feeling bored, then the PMO team scheduled for that day must visit the patient's home to do PMO work in the patient's home so that the patient continues to take medication and get an injection. PMO must also remind to return to the initial agreement to take medicine at the health center. The communication (SMS) team will provide news to local midwives, village officials and cadres to give advice and encouragement to the patient and her family to come back to the puskesmas for treatment.

The PMO consisting of 10 paramedics was led by the responsible doctor in charge of directly supervising MDR TB patients while taking medication in a special room at the Kaligesing Health Center. The supervisory team is scheduled to take turns to reduce the risk of transmission of highly infectious MDR TB. Every two weeks, PMO officers and responsible physicians share medication activities where patients can share their experiences during medication, health changes felt during taking medication, perceived side effects, and ways to overcome side effects. For example, some patients told that by eating gelatin will reduce nausea when taking medication, then the next day another patient will bring gelatin to take medicine. This matter, of course, will increase the enthusiasm of other patients. During the sharing activity, PMO officers and doctors use N95 masks and are two meters away from the patient, just as they do when taking medication.

The presence of treatment at the puskesmas carried out together with other TB patients make them receive attention not only from their families and health workers but also from fellow patients. Patients who seek treatment together share, for example, how to eat gelatin after taking medication will reduce nausea. So on the next treatment day, the patient will bring gelatin too. The presence of other patients also motivates patients to recover.

The patient's enthusiasm for recovery, support from family, surrounding environment, village officers, and other MDR TB patients, finally after two years of the treatment, patients can recover from MDR TB. Health workers, in this case, the physician in charge and PMOs also play an important role in patients' recovery.

The 'Community-oriented care' service application in this case:

Education of health workers to patients and families needs to be done. The education includes the knowledge about disease transmission suffered by patients, a basic necessity

in using masks for patients in daily life, not spit carelessly, and not share the same eating utensils. Proper ventilation and home lighting need to be maintained to prevent the proliferation of M.Tuberculosa bacteria. Support and attention need to be given by the family to patients, for example, support in taking regular medication, healthy lifestyle by consuming nutritious foods, and maintaining patients health to support their recovery.

Providing counseling about Tuberculosis disease needs to be given in the surrounding environment, so there is no misunderstanding about MDR TB. So there will be no misunderstanding, and the surrounding neighbors do not isolate the patients, but precisely the surrounding environment can support the recovery of the patients by always encouraging when the patients are bored with their treatment.

The environmental health department at primary health facilities can make home visits related to the condition of the patients' home. What things need to be improved with the condition of the patient's house, in this case, such as a sufficient number of house windows, sufficient lighting of the glass window, sufficient availability of clean water, and whether the family has adopted a clean lifestyle.

Social support can also be provided by health workers, especially primary care physicians, for example by conducting routine consultations in addition to physical problems, as well as psychological problems. Primary care physicians can make home visits as an evaluation of the progress of patient recovery and evaluation of side effects arising from treatment.

The burden of MDR TB disease is high, so a promotion to the public regarding MDR TB disease is critical. Low education level, TB history, history of diabetes mellitus, and HIV can increase MDR TB mortality[14]. Prevention of MDR TB is done by providing motivation and education to pulmonary TB patients who are on treatment for six months, where they must take medication regularly. So, there is no failure and longer treatment. Public education about MDR TB disease plays a vital role in prevention programs to avoid public unrest in the community that results in the stigmatization of careers or patients and continued discrimination.

Screening for MDR TB patients also needs to be done, including GeneXpert examination, culture, and drug resistance. If there is a treatment failure, the health worker should not delay referring patients to the MDR TB referral facility.

Providing education to the surrounding environment about symptoms and signs of pulmonary TB disease helping officers in the discovery of new cases or active case finding[12] so that treatment can be carried out as early as possible and prevent cases of pulmonary TB entering MDR TB cases.

The doctors must also explore patients expectations and beliefs that will affect their medical care. Doctors need to educate their families to always give moral support, attention, and affection to patients, and to educate patients' families to give more concern to the patient's health condition.

The patient's trust in the doctor in a long-term relationship will improve the patient's adherence to the recommended therapy. A good relationship needs to be established between the doctor and the patient considering the treatment for MDR TB requires a long time. This relationship is not only until the patient is declared completely cured but must also be continuous, given the infectious disease is also at risk of transmitting to other family members or relapse may arise. This ongoing relationship is not only limited to patient visits to primary health facilities but can be through home visits or by telephone. This relationship is not only limited to physical complaints but also the psychological conditions experienced by patients after a long period of treatment.

Doctors can advise patients to join in group therapy with MDR TB cases so that patients get moral support from fellow sufferers and their families. MDR TB associations exist in every MDR TB referral facility, but similar organizations also need to be established in the regions. Such associations if properly managed can provide moral support for MDR TB sufferers so that they are not frustrated in facing severe problems related to their illness.

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