



## Tuberculosis and Pregnancy

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**ABSTRACT** Tuberculosis is one of the leading cause of death in India. It affects almost all the age groups including pregnancy. It equally affects antenatal, intra-natal, postnatal and neonatal period. Due to similarity in the clinical features of tuberculosis and pregnancy, it became a challenge to diagnose and treat the disease in pregnancy. The accurate and early screening, treatment and nursing care which includes accurate nursing diagnosis and appropriate interventions results in the positive outcome of pregnancy.

**KEYWORDS :** Tuberculosis, Pregnancy, Nursing responsibility

### Tuberculosis & its incidence

Tuberculosis has once again drawn worldwide attention. It has become more prevalent in women of childbearing age especially during pregnancy, as well, their offspring. Tuberculosis is an infection caused by *Mycobacterium tuberculosis* and rarely *Mycobacterium Bovis*, which is transmitted by respiratory droplet and spread from person to person via air. All around the world in 2018, an estimated 10 million people fell ill with tuberculosis. 5.7 million men, 3.2 million women and 1.1 million children. Of these about 95% of cases and deaths are in developing countries. As per WHO in 2018, 87% of new TB cases occurred in the 30 high TB burden countries. Eight countries accounted for two thirds of the new TB cases i.e. India, China, Indonesia, Philippines, Pakistan, Nigeria, Bangladesh and South Africa. India alone accounts for 20% of the global burden of the disease including an estimate of 20,000 to 40,000 cases in pregnant women. As most cases occur in the younger age group, a large number of women with pregnancy would invariably be affected.

### Risk factors associated with tuberculosis in pregnancy

Increase in migration of people caused by changing world socio-economic status, breakdown of joint family support system, homelessness, overcrowding and poverty, poor sanitation in rapidly growing cities and the emergence of drug resistant organisms coupled with shrinking health care access have led to resurgence of tuberculosis.

### Effect of tuberculosis on pregnancy with clinical manifestations

The effects of tuberculosis on pregnancy depends on various factors such as type, site and extent of disease, stage of pregnancy when management get instituted; nutritional status of mother; presence of concomitant disease; immune system and co-existence of HIV infection; availability of facilities for early diagnosis and treatment. Poor nutritional status, hypo-proteinemia, anaemia and associated medical conditions add to maternal morbidity and mortality. Coexisting HIV infection is known to augment progression of tuberculosis and worsen the immunosuppression. The obstetric complications include preterm labour, low birth weight and increased neonatal mortality. A study of 27 pregnancies with culture positive tuberculosis detected abnormal radiographs in all the patients. So, tuberculosis is believed to get flared up with the stress of pregnancy. Similar symptoms between tuberculosis and pregnancy like tachycardia, anaemia, raised ESR and low serum albumin level, as well as dissimilar parameters (like increase in weight during pregnancy and decrease due to tuberculosis, hypertension in the former and hypotension in the latter etc.) confuse the clinical presentation of tuberculosis in pregnancy. But the clinical presentation of tuberculosis in the pregnant women is similar to non-pregnant state. Cough, weight loss, fever, fatigue and hemoptysis are the usual features. Other features like lethargy, abdominal distension, irritability and skin lesions may also be seen. Extrapulmonary tuberculosis is also fairly common and has been observed in 20% of the cases. Lymphadenitis is the most common form of extrapulmonary

tuberculosis reported and has no adverse effects on maternal and fetal outcome. Other forms of extrapulmonary tuberculosis such as intestinal, spinal, endometrial and meningeal tuberculosis are associated with increased frequency of maternal disability, fetal growth retardation and infants with low APGAR scores.

### Effect of pregnancy on tuberculosis

Pregnancy has no effect on the progression of tuberculosis. But frequent, consecutive pregnancies may have negative influence as it may reactivate the latent tuberculosis.

### Screening of tuberculosis in pregnancy

Due to similarities in the signs and symptoms of tuberculosis and pregnancy, a careful history is mandatory in high risk cases in antenatal period. History of exposure and symptoms should be obtained and in case of suspicion a tuberculin test should be carried out. If tuberculin skin test is more than 10mm of induration, a chest radiograph may be obtained in a symptomatic patient with proper abdominal screening. In an asymptomatic patient, the chest radiograph should be delayed until 12<sup>th</sup> week of gestation. A chest X-ray is (performed after shielding abdomen) also indicated if all the 3 sputum smears are negative and symptoms persist despite giving antibiotics for 1-2 weeks. Computed Topography scan of chest is preferred due to greater accuracy and less radiations. It may be taken during third trimester. Complete blood count and ESR are of limited value.

### Outcome of pregnancy with tuberculosis

Data shows that women who are diagnosed and start treatment before pregnancy or in early part of pregnancy, have a better pregnancy outcome as compared to those who are diagnosed late in pregnancy and in postpartum period. There is no statistically significant increase in congenital malformations in children born to mothers with tuberculosis though prematurity, fetal growth retardation, low birth weight and increased perinatal mortality have been commonly reported. Congenital tuberculosis is rare and less and occurs due to the fact that during pregnancy, tuberculosis may infect the placenta or female genital tract. The fetus may be infected, either, hematogenously through the umbilical vein and a primary focus develops in liver or alternatively by aspiration of amniotic fluid. However, the signs and symptoms of congenital tuberculosis usually begins within 2<sup>nd</sup> or 3<sup>rd</sup> week of life. A neonate having congenital tuberculosis may present with respiratory distress, fever, poor feeding, lethargy, irritability, abdominal distension, lymphadenopathy and hepatosplenomegaly or even ear discharge and skin lesions. There is no evidence to suggest that pregnancy makes women more likely to develop tuberculosis or have a poor prognosis if tuberculosis is diagnosed during pregnancy, provided if they are treated promptly.

### Treatment during antenatal, intra-natal and postnatal period

The indications of treatment are the same in pregnancy as those in the nonpregnant women. The drugs used in treatment crosses the placenta but does not have harmful effects on the fetus. Treatment should not be

delayed due to fetal or maternal concerns, whatever may be the period of gestation. The same regimens are recommended for use in pregnancy as for nonpregnant state except for withholding streptomycin. It is associated with the risk of fetal and maternal ototoxicity such as congenital nerve deafness in infant in case of latent Tuberculosis infection, isoniazid daily or twice weekly for 9 months with pyridoxine supplementation. Most of the drugs used as first line treatment for tuberculosis disease are Isoniazid, Rifampicin and Ethambutol daily for 2 months followed by isoniazid and rifampicin daily for 7 months have been found to be safe. Streptomycin and pyrazinamide should not be used because of harmful effect on fetus. Other antitubercular drugs contraindicated in pregnancy are Kanamycin, Amikacin, Capreomycin, Fluoroquinolones. When isoniazid is used during pregnancy, the women should take supplemental pyridoxine 50mg to prevent INH induced neuritis due to Vitamin B6 deficiency. Moreover, liver function test should be performed monthly. However, isoniazid and rifampicin cross the placenta. During vaginal delivery, cutting short second stage with outlet forceps assistance is in practice. The perinatal outcome depends on whether the tuberculosis is pulmonary or extrapulmonary and also whether it is diagnosed later in pregnancy. In a study of Indian women with pulmonary disease treated for 6-9 months in pregnancy, perinatal mortality was six times higher than in controls and the incidence of prematurity, small for date babies and low birth weight was doubled. These effects were more pronounced in cases with late diagnosis, incomplete or irregular drug treatment and in those with advanced pulmonary lesions.

#### Trment for newborn and infanteat

The infant needs evaluation for active tuberculosis with chest X-ray done at 6 weeks, 12 weeks and 6 months and examination of gastric aspirate or sputum for AFB to rule out congenital tuberculosis. If there is no evidence of active tuberculosis, the infant should receive INH prophylaxis for 3 months until after the mother's sputum become negative for AFB and the baby is MTB negative. If infant is MTB positive, then INH prophylaxis is continued till 6 months after ruling active tuberculosis. However, there is no recommendation that if mother is suffering from MDRTB, then INH prophylaxis has no role and should not be given. In such cases, the infant should receive BCG vaccination at 6 months if tests are negative. Further, BCG is not recommended in HIV positive children.

Under RNTCP, breast feeding of neonates is recommended regardless of the mother's tuberculosis status. In only active lesions the breast feeding is contraindicated. Baby should be isolated from the mother following delivery and the baby should be given prophylactic treatment. Breast feeding women taking INH should also take pyridoxine supplementation.

Spacing can be achieved by any method acceptable to the couple. Oral contraceptives should be avoided when rifampicin is used. Sterilization should be considered when family is complete.

#### Nurses role

The nursing care includes assessment, diagnosis and intervention. Nursing assessment involves obtaining history of exposure to tuberculosis. Assessing for the symptoms of active disease, auscultating lungs for crackles, during drug therapy assess for liver dysfunction like ask the patient about loss of appetite, fatigue, joint pain, fever, tenderness in liver region, clay coloured stool, dark urine, persistent paresthesia in hand and feet. Based on nursing assessment the nursing diagnosis are framed like fatigue, imbalanced nutrition less than body requirement, impaired gas exchange, ineffective airway clearance, ineffective coping, ineffective therapeutic regimen management. The nursing intervention includes administer prescribed antibiotics and antitubercular drugs, isolate the infectious patient in a quiet, properly ventilated room and maintain tuberculosis precautions, provide plenty of rest to the mother, provide mother with well balanced high calorie food in small frequent meal to conserve energy. Administer isoniazid with food to prevent its side-effects perform chest physiotherapy including postural drainage and chest percussion several times a day.

#### CONCLUSION

Tuberculosis is the third leading cause of mortality among women aged 15-44 years. It may cause infertility and contributes to poor reproductive health outcomes. Prenatal care could be a very good opportunity for Tuberculosis screening and diagnosis, following up

Tuberculosis care, especially for women who have limited access to health services, such as migrants or women of limited social/economic status, who only approach medical services when pregnant. Because of demographic changes, pregnancy and tuberculosis will be seen more frequently in both developed and developing countries and will need heightened awareness to consider the diagnosis. Standard short course chemotherapy is recommended but the maternal and fetal outcomes is improved by early diagnosis.

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