

Labor and the Perinatal Outcome during the Course of Pregnancy in Women and Their Infants with Extrapulmonary Tuberculosis

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ABSTRACT

Introduction: Tuberculosis (TB) is a disease that affects hundreds of millions of people across the world. However, the incidence in developed countries has decreased over the past decades causing physicians to become unfamiliar with its unspecific symptoms. We studied the course of pregnancy and labor and the perinatal outcome in these women and their infants.

Materials and Methods: We studied 45 pregnant women with extrapulmonary tuberculosis. These women were identified from among 180 pregnant women with tuberculosis. We recorded intrapartum maternal and fetal events, the progress of labor, the mode of delivery, the type of anesthetic drugs administered the perinatal outcome, and the course in the puerperium. The mean birth weight of the women's infants and the frequency of low birth weight (defined as a weight of less than 2500 g), prematurity (birth before 37 weeks' gestation), neonatal depression (Apgar score of 6 or less one minute after birth), and death in the perinatal period were used as indexes of perinatal outcome.

Results: 54% had started treatment with antituberculosis drugs before the index pregnancy. Among the remaining 9 women, all of whom were given a diagnosis during the index pregnancy, 13% started treatment in the first trimester, 15% in

the second trimester, and 8% in the third trimester. *P<0.004 for the comparison with women with tuberculosis at other extrapulmonary sites.

Conclusion: Improved diagnosis and treatment of TB in pregnant women are important interventions for both maternal and child health. It is important to make an early diagnosis of tuberculosis infection and disease in a pregnant woman.

Keywords: Extra-Pulmonary Tuberculosis, Pregnancy, Perinatal Outcome.

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INTRODUCTION

Every year about 700,000 women die of tuberculosis (TB) and over three million contract the disease according to the World Health Organization (WHO).¹ TB is the third leading cause of death among women aged 15–44. TB can cause infertility and contributes to poor reproductive health outcomes.^{2,3}

Most of these cases were in Asia (55%) and Africa (31%). Sadly, three Asian countries topped the list, namely India (2.0 million), China (1.3 million) and Indonesia (0.53 million).⁴

Unfortunately, women in these countries are most profoundly affected by TB, which is the third leading cause of death among women of reproductive age.⁵

As TB mostly occurs in young women, many infected women are diagnosed having the disease during pregnancy, while others become pregnant during TB medication; and more importantly, a proportion remains undiagnosed and suffers worse maternal and Perinatal consequences.^{6–12}

A recent postmortem analysis of maternal deaths highlights that infection, including TB, is an important contributor to maternal death in India.¹²

When pregnant women contract TB, the disease is more difficult to diagnose because TB symptoms such as fatigue, shortness of breath, sweating, tiredness, cough, and mild fever are similar to physiological symptoms of pregnancy. Untreated TB or TB treated late may lead to severe consequences affecting both mother and child.^{13,14}

Pregnant women with pulmonary TB who are treated appropriately do not have increased rates of maternal or neonatal complications, while without treatment, TB can lead to increased neonatal morbidity, low birth weight, prematurity, and increased pregnancy complications, including four-fold increases in maternal morbidity due to higher rates of abortion, post-partum haemorrhage, labour difficulties, and pre-eclampsia.¹⁴

The prevalence of tuberculosis, especially extrapulmonary tuberculosis, is increasing worldwide. Because information on the outcome of pregnancy among women with extrapulmonary tuberculosis is limited, we studied the course of pregnancy and labor and the perinatal outcome in these women and their infants.

MATERIALS AND METHODS

We studied 45 pregnant women with extrapulmonary tuberculosis. These women were identified from among 180 pregnant women with tuberculosis who attended the TB & Chest and OBG department at the Saraswathi Institute of Medical Science, Pilakua, Anwarpur, Uttar Pradesh, India.

The diagnosis of extrapulmonary tuberculosis was established by clinical findings combined with bacteriologic, histologic, and radiologic studies, and all patients fulfilled the diagnostic criteria of the World Health Organization.¹⁵

38 women had active disease requiring antituberculosis treatment during pregnancy, and four women (three with intestinal and one with spinal [skeletal] tuberculosis) had completed such treatment before conception. Three women with tuberculous lymphadenitis also had pulmonary tuberculosis, but the remaining 42 women had no evidence of pulmonary tuberculosis. We recorded the women's age, parity, weight, timing of the diagnosis in relation to

the index pregnancy, and antituberculosis drugs and monitored the women for complications and hospitalization during pregnancy and for antituberculosis drug toxicity. We recorded intrapartum maternal and fetal events, the progress of labor, the mode of delivery, the type of anesthetic drugs administered the perinatal outcome, and the course in the puerperium. The mean birth weight of the women's infants and the frequency of low birth weight (defined as a weight of less than 2500 g), prematurity (birth before 37 weeks' gestation), neonatal depression (Apgar score of 6 or less one minute after birth), and death in the perinatal period were used as indexes of perinatal outcome. Perinatal deaths included stillbirths after 28 weeks' gestation and deaths within 7 days after birth. The autopsy results were reviewed to ascertain the cause of death.

For each woman, we selected 4 healthy pregnant women without tuberculosis (total, 180) as controls. Each control was matched for age and parity with a woman with tuberculosis and had given birth in the hospital within 48 hours before or after the matching woman had given birth. The institute is a referral center for neighboring states of northern India; therefore, both the study and control groups were from the same area and had similar socioeconomic backgrounds. The results in the two groups were compared with the use of Student's t-tests and chi-square tests.

Table 1: Characteristics of the women with tuberculosis and the control women

Characteristic	Women with lymph-node tuberculosis (n=16)	Women with tuberculosis at other extra pulmonary sites(n=29)	Control group (N=180)
Age (yr)	26±2.6	25±5.2	24±8
Primiparity (%)	52%	60%	57%
Weight (kg)	54±6	52±7	62±1
Hemoglobin (g/dl)	10.6±1.4	9.5±1.2	11.7±2.1

*P<0.004 for the comparison with women with tuberculosis at other extrapulmonary sites.

Table 2: Antenatal and intrapartum events among the women with tuberculosis and the control women and their infants

Event	Women with lymph-node tuberculosis (n=16)	Women with tuberculosis at other extra pulmonary sites(n=29)	Control group (N=180)
Pregnancy-associated complications	5 (31.2)	9 (31)	36 (20)
Antenatal hospitalization	2 (12.5)	7 (24.1)	2 (1.1)
Preterm labor	1 (6.2)	4 (13.8)	20 (11.1)
Acute fetal distress	0	6 (20.7)	14 (7.7)
Mode of delivery			
Cesarean section	5 (31.2)	5 (17.2)	30 (16.7)
Forceps delivery	1 (6.2)	5 (17.2)	9 (5)
Spontaneous vaginal delivery	8 (50)	19 (65.5)	121 (67.2)

Table 3: Perinatal outcome among the women with tuberculosis and the control women and their infants

OUTCOME	Women with lymph-node tuberculosis (n=16)	Women with tuberculosis at other extra pulmonary sites(n=29)	Control group (N=180)
MATERNAL	38.5±2.1	38.2±1.2	39.1±1.4
Mean Duration Of Gestation (Week)			
INFANT			
Mean Birth Weight (Gm)	2489±240	2650±368	2897±598
Low Birth Weight (No.)	2(12.5)	9 (31)	17 (9.4)
Congenital Anomaly (No.)	0	0	1 (0.5)
Perinatal Death (No.)	0	1 (3.4)	2 (1.1)

RESULTS

Age, parity, weight, and hemoglobin concentrations were similar among the two groups of women with tuberculosis and the control group (Table 1). 54% had started treatment with antituberculosis drugs before the index pregnancy. Among the remaining 9 women, all of whom were given a diagnosis during the index pregnancy, 13% started treatment in the first trimester, 15% in the second trimester, and 8% in the third trimester. Characteristics of the women with tuberculosis and the control women were shown in table 1. Antenatal and intrapartum events among the women with tuberculosis and the control women and their infants were shown in table 2, Figure 1 and table 3 were showing perinatal outcome among the women with tuberculosis and the control women and their infants. Two infants of women with tuberculosis died perinatally, one from antepartum placental abruption and one from aspiration of gastric contents. There were no cases of congenital tuberculosis or fetal malformation, and no maternal deaths. * $P < 0.004$ for the comparison with women with tuberculosis at other extrapulmonary sites.

DISCUSSION

Tuberculosis (TB) is a contagious, airborne pathogen, listed as the second leading cause of death from an infectious agent.¹⁶ TB can cause infertility and contributes to poor reproductive health outcomes.¹⁷ Prenatal care could be a very good opportunity for TB screening and diagnosis and for following up TB 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.^{17,18} It is important to make an early diagnosis of tuberculosis infection and disease in a pregnant woman. Tuberculosis in pregnancy is as common as in the nonpregnant women. Better results are obtained in women known to have tuberculosis before the onset of pregnancy and who have been treated, as compared to untreated patients with active tuberculosis. The poorest results have been shown to occur in patients in whom tuberculosis is first discovered in the puerperium, since it has been unsuspected and untreated during pregnancy and the disease is generally well advanced. If tuberculosis is diagnosed and treated appropriately, the prognosis for both mother and child is excellent.¹⁹

In this study, we assessed the obstetrical implications of extrapulmonary tuberculosis by matching two groups of pregnant women - one group with extrapulmonary tuberculosis and one without tuberculosis — with similar demographic characteristics. Tuberculous lymphadenitis, the most common form of extrapulmonary tuberculosis,²⁰⁻²² had no adverse effect on maternal and fetal outcome. Because lymphadenitis is often diagnosed early, it rarely causes debility or systemic toxicity.²² However, women with extranodal tuberculosis had infants who weighed a mean of 251 g less at birth than the infants of the control women, although there was no significant difference between the groups in the mean gestational age at delivery or the rate of prematurity. These results suggest that like pulmonary tuberculosis,²³ maternal extranodal tuberculosis increases the risk of fetal-growth retardation. There were also significant increases in the frequency of low-birth-weight infants and infants with low Apgar scores soon after birth in this subgroup. It is expected that the incidence of tuberculosis among pregnant women would be as high as in general population. Considering the high prevalence of

this disease in many developing countries including India, a large number of pregnant women can be expected to suffer from TB. The clinical and laboratory diagnosis, and therapy during pregnancy and post-partum period, deserve special attention.

CONCLUSION

The effects of extrapulmonary tuberculosis on pregnancy depend on the sites involved, the severity and duration of the disease, and the occurrence of pregnancy-associated complications. Tuberculous lymphadenitis had no significant effect on perinatal outcome. However, extrapulmonary tuberculosis at other sites was associated with an increased frequency of maternal disability, hospitalization during pregnancy, fetal-growth retardation, and infants with low Apgar scores soon after birth. Pregnancy does not affect the course of TB; however, delay in treatment or untreated TB increases maternal morbidities and has the potential to cause increased incidence of preterm labour and growth restriction and can be transmitted to the newborn. First-line antituberculous drugs such as isoniazid, rifampicin and ethambutol can be used safely in pregnancy and while breastfeeding. Improved diagnosis and treatment of TB in pregnant women are important interventions for both maternal and child health. It is important to make an early diagnosis of tuberculosis infection and disease in a pregnant woman.

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