

EFFECT OF PULMONARY TUBERCULOSIS ON PRODUCT OF CONCEPTION

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SUMMARY

An attempt was made to study the effect of pulmonary tuberculosis on product of conception and risk of tuberculosis in neonates. There were 98 patients; 48 cases of pregnancy with pulmonary tuberculosis and 50 healthy controls. The incidence of premature birth (8.3%), still birth (8.3%) and mid-term abortion (16.7%) were more in pregnancy associated with tuberculosis as compared to none in controls. These reproductive wastages were related to the extent of tubercular lesions being least in patients with minimal lesion and in fresh cases. The mean birth weight (2530 ± 232 gms) and placental weight (398.55 gms) was lower in tubercular group as compared to controls (2930 ± 290 gms and 470 gms respectively).

There were no specific macroscopic or microscopic lesions in placentae of tubercular mothers which could confirm tubercular involvement. There was risk of abortion, premature birth and low birth weight in pregnant women with minimal tubercular lesion but these new borns were not at any special risk to develop congenital tuberculosis as compared to healthy non-tubercular mothers. However, new borns of mothers with extensive or disseminated disease had 8.33% chance of developing tuberculosis.

INTRODUCTION

Malnutrition and undernutrition are

responsible for great reproductive wastage e.g. abortion, premature birth, still birth, low birth weight and malformations. Tuberculosis being a chronic illness, it directly or indirectly affects

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Accepted for Publication on 05.03.1994.

the outcome of pregnancy. Premature births are more common and are related to the severity of the disease. An attempt was made to study the effect of pulmonary tuberculosis on product of conception and risk of tuberculosis in neonates.

MATERIAL AND METHODS

The present study was carried out on pregnant women admitted or attending departments or Obstetrics and Gynaecology and Tuberculosis and Chest Diseases, G.S.V.M. Medical College, Kanpur. A total of 98 pregnant women were included and divided into two groups. Group I (Control) : 50 cases, between 15 to 40 years of age, weighing more than 45 kg. and with no organic disease. Group II (Study) : 48 proved cases of pulmonary tuberculosis with pregnancy and without any other chronic illness. Detailed clinical examination was done in all cases. Patients having other chronic illness e.g. diabetes mellitus, hypertension, heart diseases and syphilis were excluded from the analysis. Patients giving history suggestive of tuberculosis were investigated to confirm the diagnosis. Radiological lesions were classified as per National Tuberculosis Association of the U.S.A. (1961). These tubercular mothers were treated with suitable anti-tubercular chemotherapy and were kept on follow up. Amniotic fluid of pregnant tubercular women were cultured on L.J. medium for tubercle bacilli. All the new borns were examined and were kept isolated from sputum positive mothers just after birth. They were weighed without clothes. Crown-

heel length and head circumference were measured. Babies born of tubercular mothers, had their gastric contents aspirated immediately after birth, examined for AFB and cultured on L.J. media for tubercle bacilli. X-ray chest and BCG test were also done in these neonates. Liver biopsy were done if new born had or developed hepatomegaly. Placentae were examined soon after delivery. It included examination of membrane, maternal surface, absence of retro-placental clots, weight, length and thickness. Few small pieces of placenta taken from different areas were sent for histological examination.

RESULTS

The present study was carried out on 98 pregnant women including 50 controls and 48 tubercular patients. Age, parity and socio-economic status were matched in the two groups. Maximum number of cases studied belonged to age group of 20-35 years and most of these patients were of poor socio-economic status.

The incidence of premature birth (8.3%), still birth (8.3%), and midterm abortion (16.7%) were more in pregnancy associated with tuberculosis as compared to none in controls. The pregnant tubercular women delivered full term living babies in 32 (66.66%) cases while 100% in controls. The full term deliveries were 90% in tubercular mothers with minimal lesions, 83.33% in mothers with moderate lesions and 53.85 in mothers with extensive lesions. Mean birth weight was lower (2530 ± 232 gms) in tubercular groups as compared to controls (2930 ± 290 gms). The mean placental weight

was significantly lower in the tubercular group (398.55 gms) as compared to controls (470 gms) ($P < .05$) (Table I & II).

There was no case of congenital tuberculosis which could be proved. However, 4 (8.33%) among 48 tubercular mothers caused tuberculosis in their newborns. These (3 out of 4) newborn's mothers had extensive radiological tubercular lesion alongwith sputum positive for AFB (Table II).

Macroscopic examination of placentae displayed common abnormality in the study group, being fibrin deposits in 20 (50%) followed by calcification in 16 (40%), necrosis in 12 (30%) and infarction in 8 (20%). However, infarction was the commonest abnormality in 6 (12%) followed by fibrin deposits in 2 (4%) in placentae of healthy women.

Only 16% placentae of healthy women showed abnormalities.

Microscopic examination of placentae showed six important abnormalities. In tubercular group the most common were mononuclear infiltration in 36 (90%) followed by intravillous haemorrhage in 28 (70%), endarteritis in 24 (60%), proliferation of Langhans cells in 16 (40%), stromal fibrosis in 12 (30%) and increased regression of villi in 8 (20%). However in controls the commonest abnormality was increased regression of villi in 12 (12%) followed by proliferation of Langhans cells in 8 (8%), intravillous haemorrhage in 8 (8%), endarteritis in 4 (10%) and mononuclear infiltration in 4 (10%) (Table III).

All amniotic fluid and gastric aspirate of newborns cultured for tubercle bacilli on L.J. media were negative after 8

Table I
Product of conception in tubercular and healthy pregnant women

Product of conception	Tubercular		Control	
	Number	Perccn'age	Number	Percentage
A. Abortion	8	16.7	0	0
B. Pre Term Delivery				
- Alive	2	4.14	0	0
- Dead	2	4.15	0	0
C. Full Term				
- Alive	32	66.66	50	100
- Dead	4	8.33	0	0
- Mean birth wt.	25.30 \pm 232 gms		2930 \pm 290 gms	
- Mean placental wt.	398.55 gms		470 gms	
Total	48	100	50	100

Table II
Showing relation between radiological lesion, sputum positivity and product of conception

Radiological Lesion	Sputum Status for AFB		Abortion	Preterm Delivery	Full term Delivery		Total	Congenital Tuberculosis in newborns	Tuberculosis in newborns
	+ve	-ve			No.	%			
Minimal	4	16	2	0	18	90	20	0	0
Moderate	15	0	2	2	11	83.33	15	0	1
Extensive Lesion	13	0	4	2	7	53.85	13	0	3
Total	32	16	8 (16.67)	4 (8.33)	36 (75)		48 (100)	0	4 (8.33)

weeks. Two newborns had developed positive B.C.G. test, primary complex in lung and hepatomegaly within one month. The histopathology of liver showed fibroblastic proliferation, lymphoid formation, lymphocytic infiltration and sinusoidal proliferation.

DISCUSSION

Tuberculosis was regarded as a great misfortune and consequently it was recommended to prevent pregnancy by most available contraceptive methods in early 1940s. Later on there was a change in the attitude towards pregnant women suffering from tuberculosis.

In 48 cases of pregnancy with pulmonary tuberculosis, 4 delivered preterm and 8 had mid-term abortion. These reproductive wastage were more common in tubercular mothers with moderate or extensive lesions. The mean birth weight of newborns and mean placental weight were also lower. Tuberculosis is usually associated with anaemia, and undernutrition that might be an important factor for low birth weight and reproductive wastage as also reported by most of workers (Sibert 1978, Shah & Shah 1979, Tripathi et al 1987). Pregnant tubercular mothers with strongly positive Mantoux test and minimal radiological lesion delivered full term babies, who did not show any evidence of congenital tuberculosis. Similar was the observation of Todd (1960).

It was observed that inspite of instructions and motivation for isolation, newborns developed tuberculosis in 8.33% tubercular mothers. These cases mostly occurred in mothers with extensive

Table III

Microscopic findings of placentae in tubercular mothers and controls

Microscopic Findings	Tubercular		Control	
	Number	Percentage	Number	Percentage
Increased regression of villi	8	10	6	12
Proliferation of Langhans	16	40	4	8
Stromal fibrosis	12	30	0	0
Endarteritis	24	60	2	4
Mononuclear infiltration	36	90	2	4
Haemorrhage	28	70	4	8
Total No. of Placentae	40	100	50	100

or disseminated tuberculosis with sputum positive for AFB. It was not possible to prove these cases as congenital tuberculosis because amniotic fluid, gastric aspirate for AFB and liver biopsy were not suggestive of tuberculosis. Despite the universality of tubercular infection, congenital tuberculosis have rarely found their way into medial literature (Snider and Bloch 1984). This may be due to foetal resistance to infection, placental resistance to tuberculosis, silent maternal disease at birth of the infant and lack of clinical suspicion for congenital tuberculosis. The diagnosis of congenital tuberculosis may be difficult to establish antemortem. But it should be suspected when the newborn baby, whose mother has active tuberculosis, fails to gain weight after first week of life or develops unexplained fever or jaundice or shows progressive enlargement of liver and spleen.

No specific macroscopic or microscopic lesion in placentae of tubercular

mothers were found which could confirm the diagnosis of tuberculosis in placentae. Although, Todd (1960) demonstrated evidence of congenital tuberculosis in newborns of tubercular mothers, he also did not find any evidence of tubercular lesion in the placentae of these women.

It becomes clear from our observations that there is enhanced risk of abortion, premature birth and low birth weight in pregnant women with strongly positive Mantoux test, minimal disease and negative sputum for AFB. But these newborns were not at any special risk to develop congenital tuberculosis as compared to healthy non-tubercular mothers. However, mothers with extensive or disseminated disease with positive sputum for AFB had 8.33% chance of developing tuberculosis in their newborns which may be rapidly fatal. It is therefore possible that many infants dying in the neonatal period due to possible bacterial sepsis are not investigated for tuber-

culosis. It is recommended that as far as possible pregnancy should be avoided during active pulmonary tuberculosis. But if per chance it occurred during chemotherapy, an effective chemotherapy will almost always result into uneventful completion of full term without any special risk to the newborns and mothers.

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