



International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 3 Number 6 (June-2015) pp. 423-428

www.ijcrar.com



Antenatal profile of infections and pregnancy outcome in a rural maternity hospital, Bangalore – A record review

A. Surekha^{1*}, A. Suguna¹ and R. Naveen²

Department of Community Health, St John's Medical College, Bangalore – 560034,
Karnataka, India

*Corresponding author

KEYWORDS

Antenatal infections and postnatal outcome, Record review.

A B S T R A C T

In spite of consistent efforts to improve the quality of maternal and child health, infections in pregnancy cause significant morbidity and mortality through various different mechanisms in pregnancy. Certain maternal infections can have serious long-term consequences for the foetus. Antenatal infections during pregnancy are associated with adverse outcomes including miscarriage, premature rupture of membranes, preterm birth and stillbirth.¹⁻
³Objective: 1.To determine the profile of antenatal infections and its association with socio -demographic, maternal and obstetric factors among antenatal mothers attending a rural maternity hospital in Karnataka. 2. To assess the pregnancy outcome of antenatal infections. It was a retrospective record review over a period of one year and data was collected using a structured questionnaire. Simple descriptive statistics and tests of association were performed. Among all the ante natal mothers 56.6 % of them were primigravida and 368 (77.6%) were in the age group of 19-29 years. The common infections found during pregnancy based on symptoms and signs were Upper Respiratory Tract Infection (URTI) (34.5%), 18.7% had Lower Respiratory Tract Infection (LRTI), 16.6% had fever and infection of skin, gastrointestinal and genitourinary tract. Based on laboratory investigations, antenatal women had typhoid, varicella, tuberculosis, syphilis, hepatitis, AIDS and malaria. In the records reviewed for the past one year (475), the incidence of miscarriage, stillbirths, preterm delivery, premature rupture of membranes (PROM), dead born, low birth weight (LBW) was 44(9.2%), 29(6.1%),52(10.9%),81(17.0%), 10 (2.1%) and 92(23.4%) respectively. On bivariate analysis, infections like syphilis and typhoid were associated with birth outcomes like low birth weight, fever with PROM, genital tract infection with miscarriages and varicella with abortions. Most of the antenatal infections can be prevented or treated if detected by routine antenatal screening. Appropriate investigation and management of other suspected infections can reduce unnecessary intervention, prevent or moderate adverse outcomes.

Introduction

A key component of the response to emerging infections is consideration of special populations, including pregnant women. Successful pregnancy depends on adaptation of the woman's immune system to tolerate a genetically foreign foetus.³

Although the effects of some infectious agents during pregnancy are well known, knowledge about many others is limited. Antenatal infectious illness in the mother can have non-specific foetal or obstetric effects and lead to miscarriage, premature labour or foetal death; these infections must be treated as any other serious illness. Infections are implicated in the pathogenesis of miscarriage, preterm labour, premature rupture of membranes. All these in turn are associated with neonatal infections and in turn morbidity of the mother and the baby. Both the direct effect of the infection and the maternal immune response contribute to these eventualities.³

Investigation and management of these infections are of vital significance in the prevention of mortality and morbidity.⁴ Pre-pregnancy or routine antenatal screening for presence of, or susceptibility to, some of these infections and appropriate management can prevent adverse foetal or perinatal outcomes; Routine antenatal Screening should generally be applied to all pregnant women.⁵ Selective screening based on risk factors is unreliable — eliciting risk factors for all relevant infections is time-consuming and unlikely to identify all those at risk and women are generally more willing to accept routinely offered tests than to acknowledge, if they are aware of it, being at high risk.⁶ Informed consent should be obtained for routine antenatal screening, which implies that women have the option of refusing. Changes in immune function during pregnancy alter a pregnant woman's susceptibility to and severity of certain

infectious diseases. These alterations are particularly problematic because physicians may hesitate to provide prophylaxis or aggressive treatment to pregnant women because of concerns about effects on the fetus.⁷

A challenge to the study of infectious diseases during pregnancy is the conventionally studies are concentrating on individual infectious disease threats and the overall knowledge about infections in the antenatal period during pregnancy and the outcomes is even more limited. Such lack of knowledge causes concern, given that there is no overall view about the common infections so as to take steps on the preventive part.

Objective

1. To determine the profile of antenatal infections and its association with socio-demographic, maternal and obstetric factors among antenatal mothers attending a rural maternity hospital in Karnataka.
2. To assess the pregnancy outcome of antenatal infections.

Materials and Methods

We conducted our study in a 50 bedded rural hospital in Ramanagara District, Karnataka. This hospital mainly provides maternity health care services. They also provide outpatient services to approximately 870 patients per week. The hospital has a bed occupancy rate of approximately 85% per year. We conducted a retrospective record review of all women who delivered over a period of one year. Permission from the hospital authorities was taken. Records over a period of one year from May 2012 to April 2013 were reviewed and data was collected using a structured tool. In addition to

demographic characteristics, the tool collected information regarding antenatal details, profile of infections and new born details which were available in the records. During the study period, we reviewed 475 records of antenatal mothers for which all the information including the new-born details were available. We did not include the antenatal mothers who were referred outside and for those whose full details were not available.

Data was entered in Microsoft Excel and analysed using SPSS for Windows version 16. Data collected was analysed for simple descriptive statistics. Means and proportions were calculated. Tests of association like Chi Square test were done to identify significant relationships between exposure factors and outcomes.

Results and Discussion

During the study period, we reviewed around 475 records of antenatal mothers. The percentage of teenage pregnancies was 89 (18.7%) in the study population. Of the antenatal mothers 456 (96.0%) of them were married and 443 (93.2 %) of them were Hindu by religion.

The demographic distribution of the study participants are explained in table 1. Above table shows the frequency and percentage distribution of demographic variables of antenatal mothers such as age and maternal education. Most of the mothers were between the age of 19 to 29 years and it was observed that 89 (18.7%) of them were teenage mothers. Among the study population 324 (68.2%) of them had school education, 34 (7.1%) were graduates and all of them were homemakers. In the study population 309 (65.1%) had four or more antenatal check-ups and 219 (46.1%) had full antenatal care i.e. at least four antenatal check-ups, two doses tetanus toxoid

injection and at least hundred iron and folic acid tablets. The medical problems found were Hypothyroidism, Pregnancy Induced Hypertension (PIH), Gestational Diabetes Mellitus (GDM), bronchial asthma, seizure disorder and cardiac problem in 32.1%, 17.2%, 12.1%, 9.3%, 2.2%, 1.1% respectively. Most antenatal women (34.5%) had Upper Respiratory Tract Infection (URTI), 18.7% with Lower Respiratory Tract Infection (LRTI), 16.6% had fever treated with antibiotics. Other infections were skin infection, gastrointestinal infection like diarrhoeal disease and genital tract infections like vaginal discharge.

Table 4 explains the blood investigation results of the antenatal mothers. Among them 312 (65.6%) had anaemia, 44 (9.2%) had Urinary Tract Infections (UTI) for which they were treated. The common infections found in blood investigations were typhoid, varicella, tuberculosis, syphilis, hepatitis, AIDS and malaria. Among the study population 268 (56.4%) were primigravida and 9 (1.8%) of them were grand multi para i.e. four or more live births. Majority of the study population (78.9%) had their delivery during 37-42 weeks. In the study population most of them, 340 (71.5%) had normal vaginal deliveries.

Of all the live births 200 (51%) were males and 192 (49%) were females and 11(2.3%) were twins and others had a singleton delivery, 392(82.5%) were live births, 10 (2.1%) were dead born. Of all the records reviewed (475), the incidence of miscarriage, stillbirths, preterm delivery, premature rupture of membranes (PROM), dead born, Low birth weight (LBW) was 44(9.2%), 29(6.1%),52(10.9%),81(17.0%), 10(2.1%), 92(23.4%) respectively. Complications for the new borne were cord around the neck, neonatal sepsis, where in 53 (11.1%) had meconium stained liquor.

Table.1 Selected demographic distribution of study population

Age of Mother	Frequency	Percentage
<19	89	18.7
19 – 29	368	77.6
> 30	18	3.7
Education of Mother	Frequency	Percentage
Illiterate	64	13.4
School education	324	68.2
Higher Secondary	42	8.8
Graduate	34	7.1
Unknown	11	2.3

Table.2 Antenatal care of the study population

Antenatal care	Frequency	Percentage
Antenatal checkups ≥ 4	309	65.1
2 doses of tetanus toxoid injections received	468	98.5
Iron and folic acid tablets ≥ 100	296	62.3
Early registration at study site	76	16.0
Full Antenatal care	219	46.1

Table.3 Antenatal infections of the study population

Antenatal infections	Frequency	Percentage
URTI	164	34.5
LRTI	89	18.7
Fever for evaluation	79	16.6
Skin infection	24	5.0
Gastrointestinal infection	19	4.0
Genital tract infection	22	4.6

Table.4 Antenatal blood investigations of the study population

Antenatal blood investigations	Frequency	Percentage
Hb (<11gm %)	312	65.6
Urine microscopy (with pus cells)	44	9.2
RBS (>140 mg %)	9	1.8
Rh –ve blood group	23	4.8
Antenatal infections confirmed with investigations		
Blood investigations	Frequency	Percentage
HbsAg (Hepatitis B)	7	1.4
VDRL (Syphilis)	10	2.1
HIV (AIDS)	5	1.0
Sputum AFB(Tuberculosis)	12	2.5
Malarial smear	4	0.02
Widal (Typhoid)	26	5.4
Varicella(Tzank +ve)	13	2.7

Table.5 New born details of the study population

Gender	Frequency	Percentage
Male	200	51.0
Female	192	49.0
Birth Weight		
Very LBW(<1500g)	5	1.2
LBW(1500-2499g)	92	23.4
Normal BW(≥2500g)	295	75.2
Other complications		
Cord around neck	15	3.1
Meconium stained liquor	53	11.1
Neonatal sepsis	12	2.5

Table.6 Associations

Sl. No.	Variable	Association	Chi square	P value
1	Low birth weight	Syphilis	3.9	0.01
		Typhoid	4.2	0.03
2	PROM	Fever	4.3	0.03
3	Miscarriage	Genital tract infection	1.5	0.04
4	Abortion	Varicella	5.3	0.02

On bivariate analysis, infections like syphilis and typhoid were associated with birth outcomes like low birth weight, fever with PROM, genital tract infection with miscarriages and varicella with abortions.

Maternal infections may adversely affect the course of the pregnancy, leading to increased risks for miscarriage or preterm delivery (such infections include listeriosis, asymptomatic bacteriuria, vaginal bacteriosis), or are associated with possible severe neonatal sepsis (examples include Gp B streptococcus infection or colonisation, and genital herpes).⁸ Studies have been done on individual infections like syphilis leading to low birth weight, varicella with congenital syndromes⁷ etc. In our study also, birth outcomes like low birth weight were associated with syphilis and typhoid, PROM with fever, miscarriages with genital tract infection and abortions with varicella.

Epidemiological evidence suggests that maternal infections may precipitate other complications of pregnancy including pre-eclampsia.⁹ Early pregnancy evokes a mild and limited systemic inflammatory response with increased levels of pro-inflammatory mediators such as prostaglandin E 2 (PGE2), tumour necrosis factor (TNF)-α, and interleukins 1 and 6.^{10,11} These inflammatory mediators promote vascular remodelling and placental invasion, necessary in early pregnancy to ensure adequate foetal growth. Therefore, acute infection may trigger perturbations in the temporal control of maternal inflammation, causing adverse pregnancy outcomes.^{12,13} Previous studies on pregnancy have centred on specific infections such as urinary tract infection, HIV and TORCH infections rather than investigating the prevalence of all infections which may evoke antinflammatory response.¹⁴

The current study arose out of the design phase of a similar study among pregnant women investigating the possible role of infection and other acute triggers in the onset of stillbirths, miscarriages and low birth weight. Hence the preventive factors at the antenatal clinic can be focussed like routine screening and proper management of infections

Conclusion

Most of the antenatal infections can be prevented or treated if detected by routine antenatal screening. Appropriate investigation and early management of other suspected infections can reduce unnecessary intervention, prevent or moderate adverse outcomes and relieve anxiety. Interventions to reduce the antenatal infections should be specific for the targeted population and directed at the quantitatively important modifiable determinants of it. Health education regarding the causes, screening of antenatal infections and early treatment is advisable among adolescent and antenatal mothers.

References

1. Brocklehurst P. Infection and preterm delivery. *BMJ* 1999; 318:548e9.
2. Goldenberg RL, Hauth JC, Andrews WW. Intrauterine infection and preterm delivery. *N Engl J Med* 2000; 342:1500e7.
3. Goldenberg RL, McClure EM, Saleem S, et al. Infection-related stillbirths. *Lancet* 2010; 375:1482e90.
4. Gwendolyn L Gilbert, MJA Practice Essentials, Infections in pregnant women
5. Gilbert GL. Routine antenatal screening and prenatal diagnosis of vertically transmissible infection.

*BaillieresClinObstetGynaecol*1993; 7: 1-23.

6. Carusi D, Learman LA, Posner SF. Human immunodeficiency virus test refusal in pregnancy: a challenge to voluntary testing. *ObstetGynecol*1998; 91: 540-545.
7. Emerging Infections and Pregnancy Denise J. Jamieson, Regan N. Theiler,† and Sonja A. Rasmussen
8. Screening for Infections in Pregnancy - What Tests Should We Offer? Dr. William WK TO MBBS, M Phil, FRCOG, FHKAM (O&G), FHKCOG VOL.14 NO.3 MARCH 2009
9. Conde-Agudelo A, Villar J, Lindheimer M. Maternal infection and risk of preeclampsia: systematic review and metaanalysis. *Am J ObstetGynecol* 2008;198:7e22.
10. Rustveld LO, Kelsey SF, Sharma R. Association between maternal infections and preeclampsia: a systematic review of epidemiologic studies. *Matern Child Health J* 2008; 12:223e42.
11. Gabay C, Kushner I. Acute-phase proteins and other systemic responses to inflammation. *N Engl J Med* 1999; 340:448e54.
12. Redman CW, Sargent IL. Latest advances in understanding preeclampsia. *Science* 2005; 308:1592e4.
13. vonDadelszen P, Magee LA. Could an infectious trigger explain the differential maternal response to the shared placental pathology of preeclampsia and normotensive intrauterine growth restriction? *ActaObstetGynecolScand* 2002; 81:642e8.
14. Smeeth L, Thomas SL, Hall AJ, et al. Risk of myocardial infarction and stroke after acute infection or vaccination. *N Engl J Med* 2004; 351:2611e18.