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Etiology of Febrile Illness during Pregnancy

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Abstract

Aim: To study the prevalence and etiology of fever in pregnancy.

Methods: Prospective descriptive study conducted over a period of 24 months from April 2008 to March 2010 in the department of Obstetrics and Gynaecology, Kathmandu Medical College, Kathmandu, Nepal. All the admitted pregnant women with fever ≥100.4° F were enrolled in the study after taking verbal consent. They were investigated and managed according to the hospital protocol. Complete blood count, urine for routine, microscopy and culture and sensitivity, blood culture for Salmonella, Widal test, and blood for malarial parasite were routinely sent for all the cases. Additional tests like liver function test, renal function test, Viral markers of viral hepatitis, AFB staining and culture were done whenever it was thought to be necessary.

Result: Total 84 cases of fever with pregnancy were admitted during the study period which accounted for 3.15% of the total pregnancy related admission during the study period. Common causes of fever were urinary tract infection (45.23%), enteric fever (20.23%), respiratory tract infection (11.9%) and viral hepatitis (5.95%). Fever with flu like symptoms without specific diagnosis was present in 16.66% of the cases.

Conclusion: Urinary tract infection and enteric fever were the most common cause of fever during pregnancy. Definitive diagnosis was not made in large number of cases due to limited diagnostic facilities for viral infections.

Key words: Fever, pregnancy, etiology

Introduction

Infections during pregnancy are an important contributor to maternal and perinatal morbidity and mortality.[1]Etiology of fever during pregnancy may be due to pregnancy related cause like UTI and chorioamnionitis and other causes which are not related to pregnancy. Pregnancy unrelated causes like infections due to bacterial; Viral, ricketsial, spirochetes etcetera also may be the causes during pregnancy. Various emerging disease have been reported in recent years. Etiology of fever in general population of Nepal is enteric fever followed by pneumonia.[2] One retrospective study reviewed the blood culture pattern of 103 patients presenting in hospital of Kathmandu with fever. Over 50% of cultures grew salmonella typhi/paratyphi of the 103 of the sera. Diagnostic antibodies were detected against murine typhus (26%), scrub typhus (22%), leptospira (10%) and dengue (8%).[3]

In another prospective study of 876 febrile patient salmonella typhi/paratyphi was found to be the most likely cause of fever.[2] Maternal immunosupression which occurs during pregnancy may alter the natural course of many infectious disease. Urinary tract infection (UTI) is the commonest cause of fever during pregnancy worldwide.[4] Other causes of fever varies according to the geographical area. The infectious causes of febrile illness remains poorly characterized in Nepal, largely due to limited diagnostic and microbiological facility.

Febrile illness during pregnancy poses threat to mother as well as fetus. High fever during pregnancy can have adverse effect in all the trimester of pregnancy. Animal experiments suggests that hyperthermia during pregnancy can cause severe fetal malformation or death of an embryo or fetus.[5] Maternal hyperthermia

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during late pregnancy or labour has been identified as a possible risk factor for cerebral palsy.[6]

This study was conducted with the aim to find out the prevalence and etiology of fever during pregnancy in Kathmandu Medical College Teaching Hospital.

Methods

Prospective descriptive study conducted over a period of 24 months from April 2008 to March 2010 in the Department of Obstetrics and Gynaecology, Kathmandu Medical College Teaching Hospital, Kathmandu, Nepal. All the admitted pregnant women with fever ≥100.4° F on two occasion at least 24 hours apart were enrolled in the study after taking verbal consent. They were investigated and managed according to the hospital protocol. Complete blood count, urine for routine, microscopy and culture and sensitivity, blood culture for Salmonella, Widal test, and blood for malarial parasite were routinely sent for all the cases. Tests like liver function test, renal function test, viral marker of viral hepatitis, sputum for AFB staining and culture were done whenever it was thought to be necessary. Multidisciplinary approach in managing the cases was done whenever it was thought to be necessary. Urinary tract infection (UTI) was diagnosed when the culture was positive or microscopical examination showed pus cells more than 5 per high power field. Diagnosis of enteric fever was made either by blood culture or Widal test. Respiratory tract infection was diagnosed clinically. Acute hepatitis was diagnosed when a patient presented with recent onset of jaundice with total serum bilirubin level equal to or above 2 gm/dl and ALT more than 2.5 times upper limit of normal.

Results

Total 84 cases of fever with pregnancy were admitted during the study period which accounted for 3.15% of the total pregnancy related admission during the study period.

Common causes of fever were Urinary tract infection in 38 (45.23%), Enteric fever in 17 (20.23%), pneumonia in 10 (11.9%) and viral hepatitis in 5 (5.95%). Fever with flu like symptoms without specific diagnosis was present in 14(16.66%) of the cases. Table 1

Table 1. Etiology of fever

Etiology	N (%)
UTI	38(45.24)
Enteric fever	17(20.24)
Pneumonia	10 (11.9)
Hepatitis	5 (5.95)
Viral fever	14(16.67)
Total	**84 (100)**

Diagnosis of enteric fever was done by Widal test in 10 (58.82%) of the cases. Blood culture for salmonella was positive only in 2(11.76%) cases. Rest 5(29.41%) cases of enteric fever were diagnosed clinically.

Of the total 84 cases of fever 37(44.5%) occurred in second trimester, 27(32.14%) in first trimester, and 20(23.8%) occurred in the third trimester. Of the total 38 cases of UTI 14 (36.84%) occurred in first trimester, 15(39.48%) in second trimester, and 9 (23.68%) occurred in third trimester.

Table 2. Trimester Distribution

Trimester	N (%)
First trimester	27(32.14)
Second trimester	37(44.05)
Third trimester	20(23.8)
Total	**84(100)**

Table 2: Of the total 17 cases of enteric fever 6 (35.29%) occurred in first trimester, 6(35.295) in second trimester, and 5(29.41%) occurred in third trimester. Of the respiratory tract infections 3(30%) occurred in first trimester, 5(50%) in second trimester, and 3(30%) in third trimester. Of the cases of acute hepatitis 4 (80%) occurred in second trimester and 1(20%) in first trimester. Of the 84 cases of fever 14 (16.66%) cases had flu like symptoms associated with fever with probable diagnosis of viral fever.

Discussion

Etiology of fever due to UTI was the commonest cause of fever in this study followed by enteric fever. Prevalence of UTI with fever in this pregnancy was 1.43% which is close to the prevalence (2%) mentioned by Maclean AB.[7]

Enteric fever is the most common cause of febrile illness in general population presenting to hospital in Kathmandu valley.[2,3] In this study enteric fever was the second most common cause of fever as this study was done in pregnant population who are at high risk of developing UTI than general population. [4] This indicates that pregnant population also has etiology similar to general population if UTI is excluded. Diagnosis of enteric fever was done mainly by clinical parameters and Widal test. Only 2 of the 17 cases were culture positive. Pneumonia is the second most common cause of fever in general population which is similar in this study if UTI is overlooked as this can be attributed to pregnant condition.[2] Other cause of fever was acute infective hepatitis as acute viral hepatitis is very common in Kathmandu Valley.[8]

Almost one fifth of the cases of fever in this study were due to flu like symptoms diagnosed empirically as viral

fever. Diagnosis of viral fever was made empirically as diagnostic aid for viral condition is not available easily in the country. Investigation for other important causes of fever in urban Nepal like rickettsial infections, murine typhus, scrub typhus, leptospira, dengue were also not done in this study as these tests are not available easily in hospitals.[3,9]

Conclusion

Urinary tract infection and enteric fever were the most common cause of fever during pregnancy. Definitive diagnosis was not made in condition suspected of having viral fever due to limited diagnostic facilities for viral infections.

Recommendation: Diagnostic facility for common causes of fever like enteric fever should be improved. Diagnostic facility for viral fever and other causes like rickettsial infections, murine typhus, scrub typhus, leptospira, and dengue should be made available.

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