RESEARCH ARTICLE

Obstetric outcomes of Human Immunodeficiency Virus positive mothers in tertiary care hospital

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Abstract

Objective: To evaluate the pregnancy outcome of human immunodeficiency syndrome-positive mothers.

Method: The prospective observational study was conducted at the Department of Gynaecology and Obstetrics, Aziz Bhatti Shaheed Teaching Hospital, Gujrat, Pakistan, from June 2011 to March 2018, and comprised pregnant women screened positive for human immunodeficiency syndrome. Risk factors and perinatal outcomes were noted on a predesigned proforma. Data was analysed using SPSS 20.

Results: Of the 74 subjects with a mean age of 29±5.27 years, 63(85.1%) were multiparous and 11(14.9%) were nulliparous. Major risk factors included unsterilized nasal or ear piercing in 70(94.6%) subjects, history of blood transfusion 57(77%) and history of dental procedure in unsterilized settings 23(31.1%). Spouses of 43(58.1%) subjects were positive for human immunodeficiency syndrome, 22(29.7%) were negative and 9(12.2%) had unknown status in this regard. In terms of outcome, 12(16.3%) subjects had spontaneous abortion, 11(12.2%) had intrauterine death of foetus, 6(8.1%) had preterm delivery and 45(60.8%) reached full term and were delivered. There were 2(2.6%) patients with stage 4 disease who died during pregnancy.

Conclusion: Human immunodeficiency syndrome infection in pregnant women was found to be associated with poor pregnancy outcome.

Keywords: HIV, Pregnancy, Pakistan, Perinatal, Risk factors. (JPMA 71: 69; 2021) **DOI: https://doi.org/10.47391/JPMA.552**

Introduction

Human immunodeficiency virus (HIV) is a major health problem worldwide and estimated 36.7 million people were infected with it till the end of 2016. It is mainly present in developed countries and Africa, and has claimed almost 1 million lives due to acquired immunodeficiency syndrome (AIDS)-related problems.[1] The prevalence of HIV in Pakistan is relatively low. It is estimated that 0.13 million people are infected with HIV in Pakistan, and only 8,900 people are on anti-retroviral therapy (ART). Out of 0.13 million, 40,000 women of child-bearing age (>15-49 years) are infected and a mere fraction of almost 5% (1900) are estimated to be taking ART.[2] It has the highest prevalence in injection drug users (IDUs) in Pakistan (21%)[2] and, according to a survey by World Bank in 2012, HIV was present in almost 50% IDUs in Gujrat district.[3]

The risk factors for HIV transmission include blood transfusion, vertical exposure, sexual exposures, and other parenteral exposures in a descending order.[4] Pregnancies in HIV-positive mothers are associated with poor outcomes.[5] The effects of HIV on pregnancy include spontaneous abortion, stillbirth, preterm delivery and death of mother.[6]

The World Health Organisation (WHO) guidelines[7] suggest the initiation of ART in all pregnant mothers regardless of their clinical stage and cluster of differentiation 4 (CD4) count, and should be continued lifelong. The current first-line regimen for HIV treatment in adults, including pregnant females, include tenfovir disoproxil fumarate (TDF), lamivudine (3TC) and efavirenz (EFV). Similarly, infant prophylaxis should be given to high-risk infants born to HIV-positive mothers as mother-to-child transmission is very high at 7 out of 10. It reduces long-term morbidity, and enhances infant immune response in infants. Current first-line drugs include zidovudine (ZID; twice daily) and nevirapine (NVP; once daily) for the first 6 weeks.

There are no current studies available on perinatal outcome in mothers having HIV infection in Pakistan. As the estimated prevalence of HIV is low, few pregnant patients are encountered in daily practice who need a patient-centred approach for the wellbeing of mothers as well as infants born to HIV-positive mothers. Although there is low prevalence of HIV reported in women of child-bearing age, many cases go unreported due to social stigmata of being HIV-positive, and unawareness about the problems associated with it.[2] There is a need for research in HIV-positive pregnant females. The current study was planned

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to meet that need by assessing the pregnancy outcome in HIV-positive mothers.

Subjects and methods

The observational cross-sectional study was conducted at the Department of Gynaecology and Obstetrics, Aziz Bhatti Shaheed Teaching Hospital, Gujrat, Pakistan, from June 2011 to March 2018.

After approval from the institutional ethics review committee, the sample size was calculated keeping frequency of stillbirth in pregnancy 3.3%[8] and using OpenEpi calculator while keeping 95% confidence interval (CI) and 5% margin of error.[9] After taking informed consent, all patients booked after pregnancy were screened for HIV using routine screening at their first visit. Patients who were already on ART or who were newly diagnosed during the screening itself were included using non-probability consecutive sampling.

All the women who were screened HIV-positive were counselled and the diagnosis was further confirmed by enzyme-linked immunosorbent assay (ELISA) for HIV. CD4 counts were checked and patients were classified into different stages using the WHO classification.[10]

Those who were already on ART continued it, while the newly-diagnosed patients were started ART as per the WHO recommendations during pregnancy.[10] ART used was combination single daily dose of 3TC 150mg, ZID 300mg and NEV 200mg (Duovir-N). Those patients who presented and were diagnosed with HIV at the time of labour were started ART post-partum. No intrapartum ART was given due to unavailability of infusions form. Duration and time of initiation of ART was noted in all patients.

Detailed history was taken regarding risk factors of HIV. Risk factors included were spouse working abroad, history of working as sex worker, history of unsterilized nasal or ear piercing, history of IDU in patient and spouse, and history of blood transfusion in patients. Patients and their spouses were enquired about their HIV status. All patients were followed during pregnancy and outcomes of pregnancy were noted. Mode of delivery and place of delivery were noted in patients who reached full-term pregnancy. Gender of neonates delivered was also noted.

Foetal death >20 weeks of gestation was considered intrauterine death (IUD). Patients were considered to have preterm delivery when they were delivered before reaching 37 weeks of pregnancy. Caesarean section (CS) was performed when there was either foetal or maternal distress or some mechanical obstruction to spontaneous vaginal delivery (SVD) or patients who did not receive ART during pregnancy and those mothers having viral load >1000 copies/ml or unknown at the time of delivery.

Patients were counselled regarding breastfeeding of neonates and contraceptive methods were advised. Neonates were started ART prophylaxis using NEV drops orally once daily and referred to HIV centre of the hospital for follow-up. Patients were followed for 3 months postpartum and condition of patients and infants, mode of infant feeding, and use of contraceptives were enquired and noted. Data was collected on a predesigned proforma, and was analysed using SPSS 20. Continuous variables, like age and duration of ART, were expressed as mean + standard deviation (SD). Categorical variables, such as risk factors and HIV status of spouse, were expressed as frequencies and percentages.

Results

Of the 74 married subjects with a mean age of 29±5.27

Table-1: Patient Characteristics.

Patients' Characteristics	n (%)
Number of Patients (n)	74 (100)
Mean Age (years)	29±5.27
Parity	
Multiparous	63 (85.1)
Nulliparous	11 (14.9)
HIV Status	
Known	41 (55.41)
Unknown	33 (45.59)
Mean CD4 Count (mm^{-3})	573±234
Initiation of ART	
Before Pregnancy	2 (2.7)
During Pregnancy	64 (86.5)
After Pregnancy	8 (10.8)
Mean duration of ART (days)	134.74±82.76
WHO Disease Stage	
Stage 1	5 (6.7)
Stage 2	58 (78.4)
Stage 3	7 (9.5)
Stage 4	4 (5.4)

CD4: Cluster of differentiation 4; ART: Anti-reteroviral therapy; WHO: World Health Organisation

Table-2: Frequency of Risk factors of HIV in sample population.

Risk Factor	n (%)
Unsterilized nasal or ear piercing	70 (94.6)
Blood transfusion	57 (77)
Dental procedure in unsterilized settings	23 (31.1)
Spouse using IV drugs	8 (10.8)
Spouses working abroad.	6 (8.1)
HIV Status of Spouse	
HIV positive	43 (58.1)
HIV negative	22 (29.7)
Unknown HIV status	9 (12.2)
History of IV drug abuse	-
Worked as sex-worker	-

Table-3: Maternal Outcomes in Human immunodeficiency syndrome (HIV) Positive Mothers.

Pregnancy Outcome	n (%)
Spontaneous abortion	12 (16.3)
Intrauterine death (IUD)	11 12.2)
Preterm delivery	6 (8.1)
Full term delivery	45 (60.8)

years, 63(85.1%) were multiparous and 11(14.9%) were nulliparous. Mean CD4 count was 573±234/mm^3 (Table 1).

Major risk factors included unsterilized nasal or ear piercing in 70(94.6%) subjects, history of blood transfusion 57(77%) and history of dental procedure in unsterilised settings 23(31.1%). Spouses of 43(58.1%) subjects were HIV-positive, 22(29.7%) were HIV-negative and 9(12.2%) had unknown HIV status (Table 2).

In terms of outcome, 12(16.3%) subjects had spontaneous abortion, 11(12.2%) had IUD of foetus, 6(8.1%) had preterm delivery and 45(60.8%) reached full term and were delivered (Table 3). There were 2(2.6%) patients with stage 4 disease who died during pregnancy.

ART was started during pregnancy in 64(86.5%) patients. Of them, 9(12.2%) were already diagnosed but not on ART, while 55(74.3%) were newly diagnosed. Also, 2(2.7%) patients who were already diagnosed and taking ART, while 8(10.8%) presented at the time of labour and were started ART postpartum. Mean duration of ART in patients who presented during pregnancy was 134.74±82.76 days while those who were already on treatment had mean duration of treatment of 318.5±9.19 days. According to WHO classification, 5(6.7%) patients had stage 1, 58(78.4%) stage 2, 7(9.5%) stage 3 and 4(5.4%) patients had stage 4 disease.

Those reaching full term were delivered in hospital. Of them, 30(58.8%) had CS and 21(41.2%) SVDs. Overall, 50(98%) patients had singleton pregnancy and 1(2%) had twin pregnancy. Besides, there were 24(46.2%) boys and 28(53.8%) girls.

In patients who delivered, 44(86%) were stable, 5(9.8%) were lost to follow-up and 2(3.92%) died during the follow-up period. The overall mortality, as such, was 4(5.4%).

While all the remaining 44(100%) patients who came for follow-up were adherent to the use of condom as a contraceptive, feeding option of top feed was adopted by only 20(45.45%) patients and 24(54.55%) adopted breastfeeding despite the counselling.

Discussion

Although the reported prevalence rate of HIV infection in Pakistan is 0.1 in adults and <0.1 in women of child-bearing age,[3] there might be a large number of undiagnosed HIV infection which is the case even in the developed countries[11] like the United States. Social dilemma associated with diagnosis of HIV further increases the woes of patients, and leads to under-reporting and complications associated with HIV. As depicted in the current study, a few patients despite diagnosis were not taking ART. Although rare among females of child-bearing age, the current study demonstrates the problems which can present in such women in our country where research data is scarce regarding this issue.

Although screening is necessary in all females at booking visit,[10] there is lack of awareness regarding booking and its benefits in our country. Early booking can lead to early diagnosis and treatment of HIV. Diagnosis of HIV before pregnancy and initiation of ART potentially leads to better outcome of pregnancy.[12] Antenatal ART also reduces the transmission of HIV to infants.[13]

Multiple risk factors are associated with transmission of HIV. There are no studies done in the country addressing the risk factors of HIV transmission among women of child-bearing age. Nasal and ear piercing is a common practice which is done mainly in unsterilized settings. The same needles are usually used which pose a major risk factor for HIV transmission as shown in the current study. Dental procedures from quacks are also a potential threat towards the spread of HIV. Blood transfusion is considered a major risk factor for HIV transmission.[4]

None of the patients in the current study had a history of IV drug abuse or working as sex worker. WHO data shows that prevalence among sex workers and IV drug abusers is 3.8% and 21% respectively.[3] A small number of spouses of these patients had history of IV drug abuse and were living abroad where they might have been exposed to unprotected sex.

One of major risk factors identified by the current study was prevalence of HIV in spouse (58.1%). There was no information available regarding transmission husband-to-wife or wife-to-husband. There is lack of knowledge about HIV in Pakistani mothers. A study showed that more than half the mothers had absolutely no idea of HIV.[14] Lack of knowledge of HIV in women and sero-positivity of spouse also pose a major risk of transmission, although rate of sexual transmission of HIV is very low.[4] A study in Faisalabad regarding risk factors of HIV in sero-positive patients showed IV drug abuse as the major risk factor followed by blood transfusion and sexual transmission.[15]

The current study showed only 60.8% pregnancies in HIV-positive mothers reaching full term and maternal mortality of 5.4%. A meta-analysis showed increased incidence of

stillbirths and pre-term delivery in patients infected with HIV[16] which is also evident in the current study. A recent study in a large sample of HIV-positive women in India reported pregnancy wastage in 17% mothers, including stillbirths (3.8%), spontaneous abortions (13.7%) and induced abortions (2.8%).[17] These figures are comparable to the current study in case of spontaneous abortions (13.7% vs 16.3%), but the rate of stillbirths was higher and none of patients had induced abortion. These differences may be due to a small sample size and inadequate ART in the current study. Another large study demonstrated stillbirths 3.3% (vs 12.2%) and preterm delivery in 19.6% (vs 16.3%).[8] This may also be due to different sample sizes.

The mortaility rates of the current study reported are comaprable with those reported earlier.[18] To the best of our knowledge, the current study is a pioneering effort in the country. However it had a small sample size which ws collected over 7 years due to low prevalence rate of HIV in women of child-bearing age.[3] Tenofovir-based ART was used which has been reported safe in pregnancy and for neonates.[19] Data regarding mother-to-child transmission was not collected, but infant prophylaxis was advised. It also showed poor adherence to counselling regarding breastfeeding.

The outcome of pregnancy in HIV-positive women can be improved by decreasing the social stigmata associated with HIV, improving knowledge about HIV and benefits of ART. Integrating maternal health with HIV services may reduce the adverse maternal and neonatal outcomes.[20] Further large-scale studies are needed in this regard.

Conclusion

HIV infection in pregnant women was found to be associated with poor pregnancy outcome.

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