

ORIGINAL ARTICLE

POSTNATAL ENCEPHALITIS: A DIAGNOSIS NOT TO BE MISSED

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Background: Viral encephalitis is a common condition but only a few studies are available on occurrence of viral encephalitis in postnatal women. The objective of this study was to determine the frequency of postnatal encephalitis among patients presenting with cerebral neurological complications during puerperium and to determine a response to 10 day course of acyclovir therapy and final outcome of the patients. **Methods:** This cross-sectional descriptive study was conducted at Department of Medicine, Unit A, Ayub Teaching Hospital, Abbottabad from Jan to Dec 2011. All patients presenting with encephalitis in their postnatal period were enrolled. Eclampsia patients were excluded from study. The diagnosis of encephalitis was made on clinical assessment, CSF routine examination, CT scan and MRI. **Results:** Among patients 16 (84.2%) presented with fever, 13 (68.42%) with headache, 8 (42.1%) with meningeal irritation, 7 (36.84%) with hemiparesis, 18 (94.7%) with altered sensorium, 13 (68.42%) with seizures, and 7 (36.84%) with coma. Cerebrospinal fluid of 16 (84.21%) patient had the changes consistent with viral encephalitis. It was normal in 2 (10.52%) patients and showed picture of pyogenic meningitis in 1 (5.26%) cases. On CT scan of brain, 3 (15.78%) had normal scans, 3 (15.78%) had cerebral oedema, 4 (21.05%) had ischemic infarct, 3 (15.78%) had meningo-encephalitis, 2 (10.52%) had infarct plus cerebral oedema, 1 (5.26%) had encephalitis and 3 (15.78%) had infarct plus haemorrhage. On MRI brain 15 out of 17 (88.2%) had lesions consistent with encephalitis. All 19 (100%) patients were treated with 10 days course of acyclovir and a broad spectrum third generation antibiotic. After hospitalisation 11 (57.8%) patients were discharged with complete recovery, 5 (26.31%) were discharged with partial recovery and 3 (15.78%) patients expired. **Conclusion:** Clinical presentation of the patient is most important in diagnosing viral encephalitis in postnatal women especially when patient presents with fever, altered sensorium and convulsions. Acyclovir therapy should be started without delay while awaiting other investigations.

Keywords: Encephalitis, postnatal, acyclovir

INTRODUCTION

Puerperal period is associated with many medical complications and one of them is cerebral neurological complications. The incidence of cerebral neurological disorders in pregnancy and puerperium is fairly high. Common complications include central nervous system (CNS) infections and cerebrovascular disorders including arterial infarctions, haemorrhage and cerebral venous thrombosis.¹

Though convulsions in pregnancy and puerperium are labelled as eclampsia unless proven otherwise there are certain other neurological complications which are life threatening if not identified and treated in time. One of the important neurological disease encountered in puerperal period is postnatal encephalitis.^{2,3} Herpes simplex encephalitis (HSE) is one of the most severe infections of CNS. The most endangered group is patients with immunosuppression, including pregnant women and women in the peripartum period.²

Primary Herpes simplex virus infections in pregnant women can result in more severe diseases than that in non-pregnant ones. In particular, gingivostomatitis and vulvovaginitis herpetica tend towards dissemination. As a result, the women can develop disseminated skin lesions associated with

visceral involvement such as hepatitis, encephalitis, thrombocytopenia, leucopenia and coagulopathy. Although disseminated Herpes simplex virus (HSV) infection is uncommon in pregnancy, the mortality is about 50%. Pregnant women with primary mucous membrane infection during the third trimester have an increased risk for dissemination and they could transmit HSV to their babies during vaginal delivery.⁴

Untreated Herpes simplex encephalitis (HSE) is progressive and often fatal in 7–14 days. A landmark study by Whitley *et al* revealed 70% mortality in untreated patients and severe neurologic deficits in most of the survivors.⁶ Raschilas *et al*⁷ reported a series of 85 patients in which 20% remained severely disabled, 28% moderately disabled, and only 14% of patients had a good recovery according to the Glasgow Outcome Scale (GOS). A study by Utley *et al* showed that patients who had a shorter delay (<5 d) between presentation and treatment had better cognitive outcomes.⁸

The objective of this study was to determine the frequency of postnatal encephalitis among patients presenting with cerebral neurological complications during puerperium and determine a response to 10 day course of IV Acyclovir therapy and final outcome.

PATIENTS AND METHODS

This observational cross-sectional study was carried out from Jan 2011 to Mar 2012 in Medical 'A' Unit of Ayub Teaching Hospital, Abbottabad. All patients presenting with cerebral neurological complications (Hemiplegia, convulsions, coma, aphasia, altered consciousness etc.) in puerperal period were selected and among those, diagnosed and treated as viral encephalitis were included in this study. Known epileptic patients presenting with convulsions, patients with hepatic and uraemic encephalopathy and patients with eclampsia were excluded from the study. Duration of postnatal period and period of neurological symptoms was recorded in days. Frequency of symptoms including fever, headache, limb weakness, altered consciousness, seizures, neck stiffness and coma (GCS<6) were recorded.

A detailed examination of all patients was carried out. Blood pressure, pulse and temperature were recorded. Glasgow Coma Scale (GCS) was recorded. Examination of motor system was carried out and signs of meningeal irritation were recorded.

Pelvic ultrasonography was done for retained products of conception (RPOC's). Lumbar puncture was done and findings on routine examination were recorded. Brain imaging (CT scan, MRI or both) of all patients was done and reports recorded.

Patients were diagnosed and treated as viral encephalitis on the following criteria:

1. Clinical diagnosis, CSF findings, CT scan and MRI all suggestive of viral encephalitis.
2. Clinical diagnosis and CSF findings suggestive of viral encephalitis plus cerebral oedema on CT scan or MRI
3. Clinical diagnosis and CSF findings suggestive of viral encephalitis but normal CT scan and MRI.
4. Normal CSF findings but CT scan or MRI suggestive of viral encephalitis.

All patients were treated with 10 days course of Acyclovir 30 mg/Kg/day IV. Antibiotics, steroids, nimodipine, mannitol, aspirin and antiepileptics were prescribed according to assessment of the patients. Glasgow coma scale was applied to evaluate the condition of patient at the time of diagnosis and to measure the response of acyclovir. Final outcome was recorded in the form of complete recovery, partial recovery or death.

Data were analysed using SPSS-10. Means and standard deviation were recorded for age, postnatal days, duration of symptoms. Frequencies were recorded of fever, headache, meningeal irritation, hemiplegia, altered sensorium, seizures and coma, retained products of conception, lumbar puncture findings, CT scan and MRI findings, drugs prescribed during hospital stay and final outcome of the patients.

RESULTS

Total 19 patients were included in our study. Mean age was 26.84±4.74 years. Mean duration of postnatal days was 13.57±5.95, mean duration of neurological symptoms was 2.68±1.66 days. Among patients 16 (84.21%) presented with fever, 13 (68.42%) with headache, 8 (42.1%) with meningeal irritation, 7 (36.84%) with hemiparesis, 18 (94.7%) with altered sensorium, 13 (68.42%) with seizures and 7 (36.84%) with coma. 3 (15.78%) patients had retained products of conception on ultrasonography, 16 (84.21%) patients had normal pelvic ultrasonography. All patients had normal vaginal deliveries either at home or hospital; 16 (84.21%) delivered at term, 3 (15.78%) presented post abortion.

Lumbar puncture was done in all the patients and cerebrospinal fluid of 16 (84.21%) patient had the changes consistent with viral encephalitis. It was normal in 2 (10.52%) patients and showed picture of pyogenic meningitis in 1 (5.26%) cases.

Computerised Tomography (CT) scan of brain was done in all patients; 3 (15.78%) had normal scans, 3 (15.78%) had cerebral oedema, 4 (21.05%) had ischemic infarct, 3 (15.78%) had meningoencephalitis, 2 (10.52%) had infarct plus cerebral oedema, 1 (5.26%) had encephalitis and 3 (15.78%) had infarct plus haemorrhage on CT.

Total 17 patients had magnetic resonance imaging (MRI) of brain and 15 (88.2%) had lesions consistent with encephalitis; 1 (5.88%) had cerebral oedema and 1 (5.88%) had meningo-encephalitis. MRI was omitted in 2 patients in whom clinical picture, CSF, and CT scans were highly suggestive of viral encephalitis.

All the 19 patients were treated with 10 day course of Acyclovir and a broad spectrum 3rd generation antibiotic. Thirteen (68.42%) received steroids, 12 (63.15%) received mannitol, 6 (31.57%) received nimodipine, 7 (36.84%) received Valproate semisodium, and 4 (21.05%) received aspirin. After hospitalisation 11 (57.8%) patients were discharged with complete recovery, 5 (26.31%) were discharged with partial recovery and 3 (15.78%) patients died.

DISCUSSION

Puerperal period is associated with many complications and one important aspect is neurological complications which are rare but is always life threatening and debilitating for the patient. Viral encephalitis is one of such important neurological complications in postnatal women. Puerperal encephalitis is not well studied till now, and on careful search of literature we could hardly find a few case reports on puerperal encephalitis. It was our observation that in postnatal women viral encephalitis is most common amongst neurological

complications in our setting and most of the patients presenting with symptoms of fever, altered sensorium and convulsions with or without other neurological symptoms, turn out to be viral encephalitis. During our study period, a total of 29 patients were admitted in our unit with cerebral neurological complications in puerperium and 19 patients amongst them were diagnosed and treated as viral encephalitis, which is a fairly high number.

A similar study was conducted by Gupta *et al* in 2006, and during one year study period, among 42 patients with primary cerebral neurological disorders, 22 were diagnosed as epilepsy.¹ In their study epilepsy was top diagnosis followed by CNS infections and among CNS infections 7 patients had tuberculous meningitis, 4 had pyogenic meningitis and one patient had encephalitis. Contrary to the study by Gupta *et al*, during our 12 months study period we admitted total 29 patients with cerebral neurological complications and amongst them 19 patients had encephalitis or meningo-encephalitis. None of our patients presented with primary epileptic convulsions in puerperium. This difference in number of patients diagnosed as encephalitis in our study is quite high which might be due to high incidence of disease in our area.

Czupryna P *et al* reported a case of postnatal encephalitis with delayed but complete recovery with acyclovir therapy.² This case is similar in clinical presentation to most of cases included in our study, but the difference is their patient showed a delayed recovery but most of our patients showed an excellent response to acyclovir within 48 hours except one patient who did not show any improvement till 6th day of acyclovir therapy. These are the patients who need intensive care and prolonged antiviral therapy. Proper counselling and motivation of relatives might help in this regard.

Similarly, a case reported by Anita Dutta *et al*³ had similarity with one of our patient, who presented at 32 weeks of gestation with convulsions and was admitted in obstetrical unit with diagnosis of eclampsia where she received magnesium sulphate and termination of pregnancy was done but patient's condition was deteriorating due to which she was shifted to medical unit. We reevaluated that patient and finally she was diagnosed as viral encephalitis and acyclovir was started. She showed a dramatic response to acyclovir and was discharged with full recovery after completion of therapy.

The acquisition of genital herpes during pregnancy has been associated with spontaneous abortion, intrauterine growth retardation, preterm labour, congenital and neonatal herpes infections.⁹ Interestingly, in our study 2 of our patients presented with postnatal encephalitis after abortion before 20 weeks of gestation and one patient had still birth at 30

weeks gestation followed by encephalitis on 22nd postnatal day.

We had another patient presenting with fever, headache and altered sensorium on 22nd postnatal day after stillbirth at 30 weeks of gestation. On examination the patient was febrile, confused and with marked neck stiffness. She was empirically started on 3rd generation cephalosporin and acyclovir. Her CSF examination showed picture of pyogenic meningitis and microbiologist also reported gram negative diplococci. We withheld acyclovir and started treating as bacterial meningitis, condition of the patient started deteriorating. Then patient underwent CT scan of brain which showed haemorrhagic encephalitis. MRI of the patient also showed typical lesion consistent with viral encephalitis. The patient was put on acyclovir again and she showed complete recovery and resolution of symptoms.

Sauerbrei *et al*⁴ studied Herpes simplex and Varicella zoster infection during pregnancy and reported that these infections are rare but severe during pregnancy and tend towards dissemination. Surprisingly, none of our patients presented with encephalitis in pregnancy. All of our patients presented in postnatal period either after vaginal delivery at term or post-abortion. We believe that there may be some predisposing factors during vaginal delivery for these infections to disseminate and need further insight.

Regarding prognosis of the patients with herpes encephalitis, Raschilas *et al*⁷ reported a series of 85 patients in whom 20% remained severely disabled, 28% moderately disabled, and 14% of patients had a good recovery according to the Glasgow Outcome Scale (GOS). Contrary to their study patients included in our study showed an excellent response to acyclovir therapy and 12 (57.8%) patients were discharged with complete recovery, 5 (26.31%) were discharged with partial recovery and 3 (15.78%) patients died. Similarly, McGrath *et al*¹⁰ studied the long term sequel of patients with encephalitis treated with acyclovir. They reported 12% mortality in first month while we had 16.66% mortality rate during hospital stay. They reported complete recovery in 48% patients while we had complete recovery in 57.8% patients. This difference suggests that recovery and response to therapy is better in postnatal patients compared to other patients presenting with encephalitis.

CONCLUSION

Clinical presentation of the patient is most important in diagnosing viral encephalitis in postnatal women especially when patient presents with fever, altered sensorium and convulsions. Acyclovir therapy should be started without delay while awaiting other investigations as it is life saving and improves prognosis.

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