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Post Viral Encephalitis Sequelae and their Rehabilitation

Dr AK Agarwal, MBBS, MS(Ortho), FICS, FIMSA, MNAMS, Professor
Dept. of Physical Medicine and Rehabilitation, KG's Medical University, Lucknow.

Introduction

Japanese Encepahalitis (JE) is a leading cause of viral encephalitis in Asia. It is a potentially severe viral disease that is spread by infected mosquitoes in the agricultural regions of Asia. It can affect the central nervous system and cause severe complications and death. It can be a risk to travelers to rural areas where disease is common. There is no specific treatment for it.

It is caused by an arbovirus. It is spread by the infected mosquitoes. It is one of a group of mosquito- borne virus disease that can affect CNS and cause severe complications and even death. JE virus has a complex life cycle involving domestic pigs and specific type of mosquito, i.e., *Culex tritaeniorhynchus*, which lives in rural rice-growing and pig farming regions. The mosquito breeds in flooded rice fields, marshes and standing water around planted fields. The virus can infect humans, most domestic animals – birds, bats, snakes and frogs. Mosquitoes become infected by feeding on domestic pigs and wild birds infected with JE virus. These infected mosquitoes transmit the JE virus to people by biting. After infection in human beings the virus invades CNS. Approximately 50,000 sporadic and epidemic cases of JE are reported annually from China, Korea, Japan, South East Asia, and the Indian subcontinent. It usually occurs in the summers and during fall in the temperate regions. JE virus in not transmitted from person to person directly. The incubation period for JE is usually 5 to15 days. Mortality rates range from 0.3% to 60%. It can be prevented by the use of vaccine, by avoiding mosquito bites by the use of mosquito repellants on exposed parts of the body, use of mosquito nets and insecticides. JE infected mosquitoes mostly feed during cooler hours at dusk and dawn.

The present study aimed at giving us a picture of patients suffering from Japanese Encephalitis where rehabilitation interventions were required. This study did not aim at their outcome after rehabilitation but presentation of the problems likely to be associated with the illness. This is likely to incite interest in the medical fraternity since it is not that well known in the present era and is posing a challenge in the health care services specifically requiring long term care and rehabilitation services.

Address for Correspondence: Dr AK Agarwal, 2 Quinton Road, Lal Bagh, Lucknow 226001

Material and Methods

A preliminary study of 18 cases of viral encephalitis including JE was undertaken to have base line information about their clinical course and sequelae at the time of their discharge (Sept to Nov 2005, peak period) from the department of Physical Medicine and Rehabilitation, K.G. Medical University Lucknow.

Rehabilitation Planning and Protocol

The following broad protocol was adopted in each case of viral encephalitis depending on the involvement.

A. Proper assessment of each case: Patients were given soft mattress on hard bed and were advised care of the back with frequent change of posture. Talcum powder on the body was used to prevent pressure ulcers. Proper positioning of all effected limbs was maintained to avoid contractures. Upper limb were kept with shoulder in 90^0 abduction, elbow in 90^0 flexion, wrist in full 30 degrees dorsiflexion and fingers in hand in the form of a grip of a cylindrical object. The lower limb was kept with hip in 30^0 abduction, knee in full extension and ankle in neutral position.

B. Passive Exercises of all effected joints were demonstrated to the parents of each case. They were advised to perform full range of movement at each affected joint, 10 times each and 5 to 6 times a day.

C. Development of postures: Every child was subjected to development of normal milestones like head control, sitting with support and then without support, crawling, standing with support and then without support and finally walking with support and then without support.

D. Training of ADL activities: Each child was given training of activities of daily life so that they can develop self esteem and independence in their day to day life. They were also advised speech therapy and counseling for their abnormal behavior as needed.

E. Nutritional Supplement- Since all these cases of JE were from low socioeconomic status having rural background hence they required nutritional supplement in the diet like plenty of milk and its products, sunlight exposure every day for one hour in the morning, fruits, calcium , iron, Vitamin B complex and Vitamin D etc.

Observations

Out of 18 cases of JE, maximum cases were males (17) and they were in the age group of 0-10 years. As per clinical presentation, 13 out of 18 were having quadriparesis and 5 were having hemiparesis. Their chief complaint was inability to stand and walk (17 out of 18) followed by loss of speech (14 out of 18 cases). In a majority of cases spasticity was present except in 2 cases where rigidity was observed. Neurogenic bladder was present in six cases, of which four patients had quadriparesis and two hemiplegia, wherein indwelling catheter was used. Abnormal behavior in the form of hyperactivity, irritability and inattention were noted in five cases.

Table No -1 : Age and Sex distribution

Age	*Male*	*Female*
0-5	5	-
6-10	9	1
11-15	2	-
Above 15	1*	-
Total	**17**	**1**

*35 year old male (JE positive) with left hemiperesis
Minimum age was 3 years

Table No – 2 : Clinical presentation versus Age

Age (in years)	*Quadriperesis*	*Hemiperesis*	
		Right	*Left*
0-15	5	-	-
6-10	8	-	2
11-15	-	2	-
Above 15	-	-	1
Total	**13**	**2**	**3**

Table No -3 : Clinical Status at the time of Discharge of cases

Clinical Status	*No of cases*	
Loss of Speech	-	14
Inability to stand	-	17
History of Seizures	-	2
Spasticity	-	16
Rigidity	-	2
Bladder Involvement	-	6
Abnormal behavior	-	5

Table No – 4 : Aids and Appliances

Name of Splint		*No. of cases*
Cock up Splint	-	4 (3 Bil & 1 UL)
AFO (BK Splint)	-	3 (2 Bil & 1 UL)
AK Splint	-	1 (Bil)

Discussion

In JE, recovery from neurological deficits takes a longtime and some problems may persist for a couple of years. Due to unaffordable prolonged tertiary care in developing countries, JE cases are usually discharged from hospital after recovery from acute phase[1]. They have reported follow up of 22 JE cases, wherein 47.3% showed complete recovery after 421 days and residual neurological problems persisted in 9 cases. According to Baruah et al, Parkinsonian feature in JE cases are rare sequelae and reported that in their series 10% cases had Parkinsonian feature at the time of discharge. In the present study there were two cases showing rigidity but Parkinsonian features were not present. In this study 8 cases came for follow up after 6 weeks and showed complete recovery in speech, bladder function and in spasticity except in one case which was showing very slow improvement in spasticity. Further long term follow up is required in the present study to highlight persistence of residual neurological sequelae in these surviving cases of JE.

Conclusion

Majority of the patients were below 10 years of age and mostly males. Quadriparesis was the most common topographical involvement followed by hemiplegia associated with spasticity. Speech was also involved in a majority of the cases. Most patients had difficulty to stand and walk and required some aids and appliances to aid in their ambulation. About one third required Foley's catheter for neurogenic bladder.

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