

Cerebral Palsy In Children Can Be Prevented

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Abstract

3702 cases of Cerebral palsy reported to Tirunelveli Medical College Hospital during 1978 to 1988 were analysed with special reference to preventable causes of Cerebral palsy. Antenatal, perinatal and postnatal history; clinical assay for early detection of cerebral palsy; and clinical profile regarding topographical distribution, pathological typing and associated disabilities were evaluated. The study revealed that postnatal acquired causes constitute the major causes for Cerebral palsy viz., encephalitis (49.3% in the inpatient series & 42.06% in the outpatient series). and tuberculous meningitis (44.28% in the inpatient series & 32.71% in the out patient series). This study stresses the need to modify & correct Health Care Delivery system so that the major causes of cerebral palsy in this part of the country viz., encephalitis and tuberculous meningitis can be totally prevented.

KEY WORDS : Cerebral palsy; Tuberculous meningitis; encephalitis.

Introduction

Cerebral palsy is a disorder of movement and posture due to a nonprogressive lesion in an immature brain. It may be associated with other disabilities viz., mental subnormality, hyperkinetic activity, defective hearing/speech and seizures. The Cerebral palsy dysfunction occurs as a result of insult to the brain during antenatal, perinatal, and postnatal period. The prevalence of Cerebral palsy in India is 2.6% with deformity & 15.2 with paralysis in rural population and 3.2% with deformity & 9.9 with paralysis in urban population among the locomotor handicapped. Cerebral palsy is the second commonest cause of childhood disability. Among the causes for Cerebral palsy, postnatal causes can be totally prevented, perinatal causes can be eliminated by effective application of available advanced medical technology and the incidence of antenatal causes can be reduced by good antenatal care.

Methodology

Children with motor development delay re-

ported to the Outpatient services of Department of Physical Medicine & Rehabilitation during 1981 to 1988 and Inpatient Departments of Tirunelveli Medical College Hospital during the years 1978-1987 were evaluated for evidence of Cerebral palsy. Clinical assay for early detection of Cerebral palsy was evolved and used for this study. Antenatal, perinatal and postnatal history; topographical distribution; pathological typing and associated disabilities were analysed.

Clinical assay for early detection of cerebral palsy:

- (1) At birth :- Cerebral palsy is rarely diagnosed at birth and there should be an index of suspicion of cerebral palsy in all cases with poor antenatal & perinatal history, Rh incompatibility (or) ABO incompatibility and prematurity.
- (2) Birth to 4 weeks:- Presence of lethargy.(or) drowsiness, feeding difficulties, icterus neonatorum and neonatal seizures.
- (3) At 4 Weeks :- Presence of hypotonia, poverty of movements during Moro's reflex and tonic neck reflex.
- (4) At 8 Weeks :- Presence of nystagmus, lack of fixation of eye over moving objects, lack of facial expression, absence of smile & frowning, persistent head rolling and opisthotonus.
- (5) At 16 Weeks :- Presence of head lag,

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persistent strabismus, absent (or) reduced vocalization (or) laughter, lack of attention span, hand closed over thumb and persistent Moro's reflex.

(6) At 32 Weeks :- Presence of persistent Tonic neck reflex, head lag, absent prone lying, random automatic movements, adduction of legs during sitting and kicking both feet in extension.

(7) At 48 Weeks :- Presence of persistent plantar grasp, preference for using only one hand, left handedness without family history and bottom shuffle.

(8) Presence of primitive reflexes, and absence of righting reactions & protective phenomena.

(9) Presence of hydrocephalus, asymmetrical Moro's reflex, asymmetrical parachute reaction, involuntary mass movement and increase of tone on change of position and hypotonia.

Results

In the Inpatient series, encephalitis constitutes 1667 cases (49.3%), tuberculous meningitis, 1497 cases (44.28%) Fig. 1 and others including antenatal and perinatal causes 217 (6.4%). In the Outpatient series, encephalitis constitutes 135 cases (42.06%); tuberculous meningitis, 105 cases (32.71%); antenatal causes, 6 cases (1.86%) and perinatal causes, 75 (23.31%) thus in Inpatient and Outpatient series, both encephalitis and tuberculous meningitis constitute the major

causes of Cerebral palsy.

Review of the predisposing factors showed that there was a general trend of reduction in induced abortion, threatened abortion, preeclamptic toxemia and prolonged labour. But the incidence of antepartum haemorrhage and asphyxia neonatorum did not show any evidence of reduction. However prematurity showed definite evidence of increase in its incidence (Table 1).

Discussion

In the study the major causes of Cerebral palsy is postnatally acquired encephalitis & tuberculous meningitis i.e., 93.58% in the inpatient series and 74.76% in the outpatient series. Review of Indian literature also supports increased prevalence of these diseases.^{2,3,4,5} The prevalence of tuberculous infection is about 40% in all age groups and the risk of infection is about 2-4% per annum. It only indicates lack of BCG vaccination in a susceptible population. Japanese encephalitis is transmitted from the animal host viz., pig to mosquito culicine. After an incubation period of 9-12 days the virus is transmitted to man to exhibit encephalitis. Japanese encephalitis was first recognised in 1955 at Tamilnadu in India. The survey done by the National Institute of Virology, Pune documented that about 50% of the population of South India

Table - 1
Predisposing Factors in Cerebral palsy

Nature of Illness	Incidence - Number of cases									
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Induced Abortion	1225	1320	1205	1197	1469	501	287	142	58	148
Threatened Abortion	74	58	43	31	40	51	37	26	21	35
Pre Eclamptic Toxemia	168	141	64	50	13	28	25	37	22	9
Prolonged Labour	56	18	7	19	7	8	29	5	8	0
Antepartum Haemorrhage	22	13	45	28	24	30	12	22	40	30
Asphyxia Neonatorum	70	50	17	35	18	14	29	48	68	58
Pre-Maturity	43	48	35	44	86	30	60	133	93	133

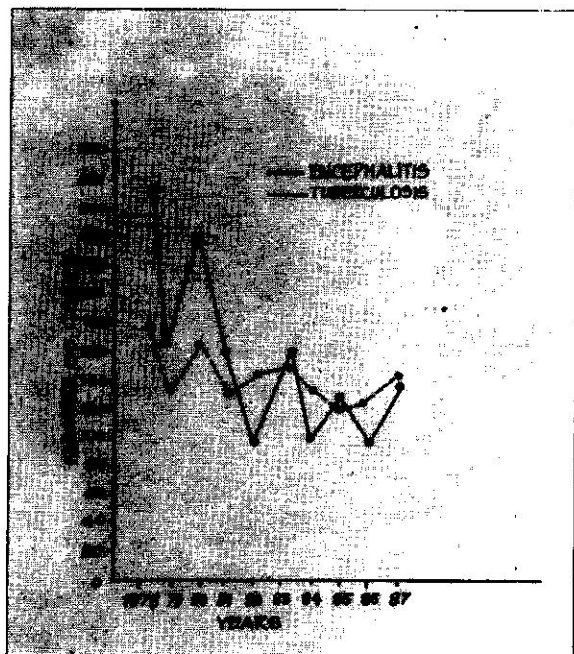


FIG. 1.

Incidence of tuberculous meningitis and encephalitis as a cause for Cerebral palsy from 1978 to 1987.

have neutralising antibodies to this virus. Japanese encephalitis can be controlled by vector control by (1) aerial (or) ground bogging in the ultra low volume insecticide malathion (or) fenitrothion and (2) vaccination of population at risk using two doses of killed mouse brain vaccine each 1 ml (or) 0.5 ml for children below 3 years at the interval of 1-2 weeks with a booster dose after a month and revaccination after 3 years.

It is very much contrasting to note from the Western world that preventive measures are totally exploited to prevent the postnatal preventable causes of Cerebral palsy with a resultant negligible number of children with Cerebral palsy due to postnatal causes. The perinatal cases for Cerebral palsy constitute only smaller per-

centage similar to Western countries. Surprisingly the antenatal causes for Cerebral palsy forms the negligible number in this study. But it still remains as the unsolvable causes for Cerebral palsy.

Conclusions

This study documents the need for active modification & correction of health care delivery system to prevent the totally preventable causes of Cerebral palsy viz., encephalitis and tuberculous meningitis etc., by effective immunisation programme.

The study also emphasises the growing need to train man power to apply the advanced medical technology. This study emphasizes the need to undertake research work to prevent the unsolved causes of Cerebral palsy.

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