

spinal cord compression is mostly due to extra-dural extension of the angioma rather than bony expansion(5). Embolisation of feeding arteries, avoiding the anterior spinal artery supplying the cord, helps in reducing the intra operative blood loss and facilitates surgery(6).

The management of CVH is still controversial. Embolisation alone is recommended as the only and most definitive therapy by some authors(6,7). Decompressive laminectomy alone or radiotherapy following laminectomy has not been reported as frequently in recent literature(8). In order to prevent delayed collapse of vertebral body, stabilisation can be achieved by preoperative retrograde embolisation with methyl methacrylate or low dose radiotherapy, thus obviating major stabilisation procedures using bone or metal rods(8).

REFERENCES

1. Schmorl G, Junghanus H. The Human Spine in Health and Disease. New York, Grune & Stratton, 1971.
2. Mohan V, Gupta SK, Tuli SM, Sanyal B. Symptomatic vertebral hemangiomas. Clin Radiol 1980, 31: 575-579.
3. Laredo JD, Reizine D, Bard M, Merland JJ. Vertebral hemangiomas: Radiologic evaluation. Radiology 1986, 161: 183-189.
4. Gasten A, Nguyen JP, Djindjian M. Vertebral hemangioma: CT and arteriographic features in three cases. Neuroradiology 1985, 12: 21-23.
5. Chittipantulu G, Dinakar I, Ramachandrarao S, Venkataramana G, Somayajulu MVRJ, Satyanarayana VV. Spinal cord compression due to hemangioma of vertebra (Report of two cases). J Assoc Phys India 1986, 34: 663-664.
6. Gross CE, Hedge Ch J, Binet EF, Kricheff II. Relief of spinal block during

embolisation of a vertebral body hemangioma. J Neurosurg 1976, 45: 327-330.

7. Nguyen JP, Djindjian M, Gaston A, *et al.* Vertebral hemangiomas presenting with neurologic symptoms. Surg Neurol 1987, 27: 391-397.
8. Nicola N, Lins E. Vertebral hemangioma: Retrograde embolization — stabilisation with methyl methacrylate. Surg Neurol 1987, 27: 481-486.

Impact of Universal Immunization Programme on the Incidence of Tetanus Neonatorum

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Disease surveillance data is required to streamline immunization activities and direct measures to areas where they are needed. We report the impact of Universal Immunization Programme (UIP) on the incidence of neonatal tetanus in a rural area of Allahabad.

Material and Methods

This study was carried out in Jasra

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Community Development Block with a population of 123,000 distributed in 123 villages and 27 sub-centres. The standard WHO cluster sampling technique was used to randomly selected 30 villages(1). In each cluster, 67 mothers were interviewed who delivered between March 1989 and April 1990. History of receiving immunization with tetanus toxoid during the antenatal period and practices during the delivery were recorded on format prescribed by the Ministry of Health and Family Welfare, Government of India(2) by two teams. Each team was supervised by one of the authors who investigated all neonatal deaths and the information was recorded on a standard format prescribed for the purpose(2). A simple check list was used to identify the symptoms and signs before death and the cause of death. Death due to neonatal tetanus was defined using the following criteria: (i) feeding and activity for the first two days of life; (ii) inability to suckle followed by stiffness and or convulsions; (iii) onset of illness between 3 and 28 days; and (iv) death within first month of life. Interviews were conducted on a house to house basis till 67 live births were recorded in each cluster. In cases where there were less than 67 live births in the selected village, the neighbouring villages were also included and surveyed till 67 live births were recorded.

Assuming a case fatality rate of 80%, the number of cases of neonatal tetanus was estimated by dividing the number of deaths due to the disease by 0.8. The incidence of neonatal tetanus was calculated by dividing the total number of cases by the number of live births.

Results

The survey covered a population of 89,470 and 2,010 live births in 30 clusters.

There were 49 neonatal deaths of which 30 (61.2%) were due to tetanus neonatorum, 10 (30.4%) died of high fever of undermined etiology, 5 (10.2%) due to pneumonia, 3 (6.1%) of diarrhea, and in one case the cause of death could not be ascertained. The incidence rate of tetanus neonatorum was found to be 18.7/1000 live births in the population.

Ninety three per cent of the births were conducted by the family members and untrained dais, 2.4% by trained traditional birth attendants. In 69 (3.4%) deliveries, help of the medical doctor was sought, while in 24 service of multipurpose female worker was utilized. Nearly half (46.7%) of neonates with tetanus were brought to the District Hospital for treatment. Of these, majority were first brought to Primary Health Centre from where they were referred to the District Hospitals. The rest were either taken to private practitioners or received care from the traditional healers. Of 2,010 mothers interviewed, 1,336 (66.5%) had not received tetanus toxoid, 359 (17.8%) had received only one dose of toxoid and 315 (15.7%) had been immunized with two doses. Of the 30 neonates who died of tetanus, mothers of 27 (90.0%) had not received any dose of toxoid during antenatal period while in 3 mothers only one dose was provided. None of the neonates born of mothers who were immunized with two doses of tetanus toxoid during pregnancy, had suffered from tetanus.

Discussion

The National Health Survey in 1981-82 estimated 1.6 to 2.0 lakh deaths due to neonatal tetanus each year in India(4). The overall estimates of the neonatal tetanus mortality showed significant differences between the various States and Union Territories(5). The figures ranged from as low

as 1 death per 1,000 live births in Delhi to as high as 66.7 deaths/1,000 live births in rural areas of Allahabad division(5). Though the figure for Allahabad (rural) has come down to 18.7/1,000 live births as is evident in this study, the figure is still high when compared with the national average of 13.3(2) and 15.6 deaths/1,000 live births for rural areas(6).

In our study 61% of the neonatal deaths were attributed to tetanus. Unfortunately, only a slight decline in the rates have occurred and no significant differences have been noted inspite of the fact that now trained birth attendant is available in every village and six years have elapsed since the start of UIP. The causes of neonatal tetanus include unhygienic cutting of the cord and lack of immunization of mothers with tetanus toxoid during pregnancy. In conformity with earlier reports(6), 86-93% of the deliveries in rural areas are conducted by family members with the help of untrained birth attendants. Similarly, coverage with two doses of tetanus toxoid was also observed to be low. The corrective measures include (i) ensuring two doses of antenatal tetanus toxoid administration, and (ii) health education to everyone concerned regarding the importance of conducting hygienic deliveries.

REFERENCES

1. Sokhey S, Bhargava I, Basu RN. Immunization Programme in India—A Handbook for Medical Officers. Ministry of Health and Family Welfare, Government of India, 1984, pp 34-37.
2. National Immunization Programme Module to Conduct Disease Surveillance. Ministry of Health and Family Welfare, Government of India, 1989, pp 61-62.
3. Kumar V, Kumar R, Mathur N, Raina N, Bhasin M, Chakraverty A. Neonatal tetanus mortality in rural community of Haryana. *Indian Pediatr* 1988, 25: 167-168.

4. Basu RN, Sokhey J. Special combined survey for poliomyelitis and neonatal tetanus as supplement to routine surveillance system in India. *J Comm Dis* 1984, 16: 148-153.
5. Basu RN. Control of neonatal tetanus. *Indian Pediatr* 1982, 19: 891-892.
6. Registrar General of India. Infant and Child Mortality—A Preliminary Report. Office of the Registrar General of India. Ministry of Home Affairs, 1979, pp 23a-23b.

Unusual Presentation of Poliomyelitis

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The annual incidence of acute poliomyelitis is 2-5 per thousand rural pre-school children and 1-3 per thousand urban school children(1). In India poliomyelitis affects young children mostly between 6 months to 5 years. Recent studies have indicated a changing trend in the epidemiology of polio virus infection. It is becoming increasingly a disease of school

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