

NEONATAL TETANUS IN MEWAT – A RETROSPECTIVE STUDY

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ABSTRACT

Tetanus is a deadly vaccine preventable disease with high case fatality rate with worst cases seen in pregnant mothers and newborn. The most rapid reductions have been made in neonatal tetanus worldwide and also reported from our country. In February 2012, 25 countries including 15 states of India and union territories have been validated as having achieved MNT (maternal and neonatal tetanus) elimination in which Haryana is one of the states (ACIP, 2013). But Mewat is one of the districts in Haryana where the immunisation coverage is poor as compared to rest of Haryana due to multiple factors. The vaccination coverage of DPT and BCG is 16% and 53% only respectively.

KEYWORDS : Neutralise toxins, Disease, Microorganism, Hygienic

The complete immunisation status is only 12.2% which is quite low as compared to national average. As per DLHS3 (District Level Health and Facility Survey 3) data in Mewat district only less than 30% deliveries are institutional while less than 80% mothers had taken one or two doses of TT during antenatal visits (MOHFW, 2015). The incidence is quite high in our set up and hence we conducted this retrospective study in Department of Pediatrics at SHKM GMC Mewat to know the clinical profile, immunisation status, and source of infection and outcome of neonatal tetanus.

MATERIALS AND METHODS

This study was conducted in the Department of Pediatrics at Government medical college Mewat. 18 neonates who fulfilled the criteria as case of tetanus admitted from February 2013 to May 2015 were studied retrospectively. This study was done after taking approval from institutional ethical committee. Data demographic profile and basic characteristics regarding the age of presentation, sex, place and type of delivery, number of TT doses and prenatal care, clinical presentation and outcome were collected from the case sheets of patients at medical record department of our hospital. Diagnosis of disease was made on clinical basis only: inability to feed, trismus, spasms, ophisthotonus and features of autonomic instability which may or may not be present depending on the severity

of disease. Urwadia (Urwadia, 1994) staging system was utilised for differentiating the newborns which is a prognostic scoring system based on trismus, severity of increased tone, respiratory involvement and features of dysautonomia. In addition, works up for sepsis, CXR findings for evidence of pneumonia were also recorded. Management of cases were done as per protocol which included tetanus immunoglobulin to neutralise toxins, antibiotics to eradicate microorganism. Patients were kept in isolation room; their spasms were controlled with intravenous diazepam (0.2-0.3mg/kg) which was given intermittently with or without phenobarbitone. In severe cases where spasms were not controlled with diazepam intermittent doses, midazolam infusion (4-8mcg /kg/min) was given. All the newborns were kept nil orally and shifted to nasogastric feeds with improvement after few days. After 5 days of spasm free period sedating drugs were tapered and stopped. Newborns were either discharged following tetanus toxoid immunisation or referred to higher centre for ventilator support for respiratory compromise.

RESULTS

All 18 babies were term babies with mean weight of 2.90kg (2.5-3.2). Mean age of presentation was 8.2 days. Majority of neonates were male (77.7%). All the babies were born unsupervised at home. Only 2 mothers were immunised for TT. Other predisposing factors which

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Table 1: Demographic and Clinical Profile of Patients With Neonatal Tetanus

Characteristics		No of Cases	%
Gender	Male	14	77.7
	Female	4	22.3
Maternal Immunisation Doses of TT	0	16	88.9
	1	0	0
	2	2	11.1
Home delivery		18	100
Source of infection	Umbilical sepsis	4	22.22
	Head shaving	5	27.77
	Circumcision	2	11.11
Clinical features	feeding Difficulty	18	100
	Fever	3	16.66
	Autonomic instability	8	44.44
	ophisthotonus	12	66.67
Udwadia staging	Stage 3	14	77.78
	Stage 4	4	22.22
Outcome	Discharge	6	33.33
	Death	8	44.44
	LAMA	2	11.11
	Referred	2	11.11

attributed to the disease were found to be umbilical sepsis (22.2%), head shaving (27.7%) and circumcision (11.1%). Difficulty in feeding was universal feature in all neonates. Ophisthotonus and autonomic instability was present in 66.67% and 44.44% cases respectively both of which indicate the severity of disease. As per prognostic scoring system (Urwadia, 1994), majority of cases belonged to grade 3 (77.7%) and grade 4 (22.2%). The clinical spectrum of disease is mentioned in table 1. Mean duration of stay was 8.1 days.

DISCUSSION

Tetanus continues to be described as silent killer as many neonatal deaths from remote and difficult to access areas remain unreported. Mewat is a rural underdeveloped district of Haryana which comprises of uneducated especially low female literacy rate, low economic status, families having many children (census-mewat2011, census-Haryana2011). Ignorance, negligence and prevalence of socio cultural taboos are very high among Meo population which besides causing harm and disease among the people, also contribute to poor statistics of health indicators of Haryana and country. So far as the immunisation status of the under 5 children (DLHS-3) data,

Mewat occupies the bottom 5 position in the country. Our study also observed similar results. Only 2(11.1%) mothers were completely immunised and none of the mother was delivered at hospital. As per Haryana key indicators, these statistics are much lower in Mewat. As per the DLHS-4 data (MOHFW-2015), 52.1% of children were fully immunised, out of which 51% coverage were in rural Haryana only. None of the delivery was conducted in hospital which is contrary to the reports of DLHS-4 data of Haryana that percentage of institutional delivery is 77% in Haryana and 74% in rural area. It was observed by Gupta et al that complete prenatal immunisation with TT during pregnancy (2 doses one month apart) was associated with 88% reduction in the risk of neonatal tetanus among the newborns (95% CI 59%-98%) (Gupta et al,1998). Another review article from Pakistan also summarised that the key intervention to reduce neonatal mortality from neonatal tetanus is vaccination of pregnant woman with TT % (Khan et al, 2013). Therefore this area needs special mention as far as strengthening of implementation of immunisation programme and it requires very sincere efforts at every level in health care system.

Neonatal mortality in our study was 44.4% which is similar to other studies. Poudel et al (Poudel et al, 2008)

reported neonatal mortality in 40% of cases while Quddus et al (Quddus et al., 2002) found that the case fatality rate among the NNT cases admitted to the district hospital was 62%. The unhygienic practice that contributed most to the high mortality rate in the area was the use of soil as delivery surface (OR = 3, 95% CI: 1.1–9.1). Causes of mortality in our study were sudden cardio respiratory arrest secondary to arrhythmias and sympathetic over activity in 5 patients, two patients died of septic shock and patient died of disseminated intravascular coagulation. High mortality was probably due to more severity of disease at presentation as suggested by Urwadia scoring and may be because of associated sepsis in three patients.

Home delivery was seen in all cases which again emphasizes the role of hygienic birth practices are must for prevention of this dreadful disease. Institutional deliveries, training of birth attendants, availability of clean delivery kits are important tools which can really eliminate this disease in this area. Umbilical sepsis (33.3%), circumcision (33.3%) Head shavings (55.55%) were other associated sources of infection requiring admission. Antia-Obong found in their series that 33% of infants with tetanus were also bacteraemic most commonly from infected umbilical cord stump (Antia et al,1992). Traditionally, circumcision is done by barbers, or quacks in majority of cases in this Mewat region of Haryana and there is culture of application of kajal, cosmetic powder, sindoor to the umbilical stump for early fall of the umbilical cord which may act as portal of entry for bacteria and hence the disease especially in setting where there is no antenatal vaccination of the mother. Goel A et al also concluded socio cultural taboos like application of unclean substance was associated with neonatal sepsis in 76.4% cases and 13.7% developed neonatal sepsis following circumcision (Goel A et al ,2015) .Poudel et al reported umbilical sepsis as cause of infection in all 5 neonatal cases included in this study of Nepal. Richard Onalo et al reported home delivery in 80% cases in their study. They found umbilical sepsis and traditional uvulectomy as precipitating factors in their study (Richard et al, 2015).

CONCLUSION

Maternal and neonatal tetanus is a disease that strikes down the poorest of poor and most vulnerable, especially women and their newborns living in areas with limited access to health services and poor hygiene. Recent initiatives to strengthen the health systems and improve access to immunisation services such as Mission Indradhanush will no doubt contribute to the country's ability to sustain this achievement .These crucial steps can play a key role in eliminating the disease in areas like ours which is full of social taboos and beliefs.

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DHINGRA ET AL. : NEONATAL TETANUS IN MEWAT – A RETROSPECTIVE STUDY

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