TETANUS AND IMMUNIZATION: A SIX-YEAR STUDY

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SUMMARY

There is a high incidence of tetanus in the Malaysian state of Kelantan. Out of 162 reported cases of tetanus in Peninsular Malaysia during 1979 – 1984, 62 cases were from Kelantan, i.e. 38% of the total reported cases in Peninsular Malaysia. Thus a retrospective study was carried out to analyse the possible factors responsible for this high incidence. 62 cases of tetanus admitted to the General Hospital, Kota Bharu, over a period of 1979 – 1984 were studied.

Neonatal tetanus, though still existing, had been considerably reduced compared to the preceding five-year period (1975–1979).[1] There was notable absence of cases in the two months to four-year age group, 24% of the cases occurred in the 10 – 20 years, and 29% in the age group 25 – 40 years. Since tetanus is a disease preventable by active immunization,[2] every effort must be taken to improve immunization coverage and increase the public awareness to prevent unnecessary loss of lives.

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INTRODUCTION

Active immunization provides the best and safest protection against tetanus. The tetanus immunization programme followed in Kelantan is in accordance with the programme of the Ministry of Health, Malaysia.

Three injections of adsorbed tetanus toxoid at four-weeks intervals are given to antenatal mothers, starting at 24 weeks of gestation (when the foetal movements are felt). This programme was started in Kelantan 1976. Primary immunization of infants is given at three months, four months and five months of age. Primary immunization gives immunity for about one year.[2]

The first booster is given at one-and-half years of age, the second booster at six to seven years of age (age at school entry) and the third booster at 13–14 years of age. Subsequently, booster injections at ten-years intervals should maintain immunity.[3] Active immunization for prevention of tetanus in the wounded patient will depend on whether he/she has been previously immunized. If the last dose of toxoid was given more than five years before the injury, a booster dose of toxoid should be given.[4] Patients seen in any clinic or hospital in Kelantan if suspected of suffering from tetanus are referred to the General Hospital Kota Bharu for admission and management.

This paper reports on all cases diagnosed as tetanus that were treated in General Hospital Kota Bharu during a five-year period, 1979–1984.

MATERIALS AND METHODS

Sixty-two cases of tetanus were studied between 1979 and 1984. They were managed in the Intensive Care Unit of the General Hospital Kota Bharu. Diagnosis was based on clinical findings and by elimination of other conditions which have a similar clinical picture, e.g. dystonic reactions to phenothiazines, metaclopromide, strychrine poisoning, meningitis, etc.

In the intensive care unit, these patients were treated on the following principles. Firstly, the neutralization of the circulating toxin by the use of tetanus immune globulin. Secondly, for control of prevention of muscle spasm and rigidity, by the use of diazepam and chlorpromazine alternating with each other. Thirdly, the elimination and reduction of bacilli by debridements toilet and antibiotics. Finally, we used paralysis and ventilation for neonatal tetanus and in patients where there was failure to control spasm in spite of heavy sedation or there was respiratory embarrassment due to secretions in the oropharynx.

RESULTS

During 1979 – 1984, there were 162 tetanus cases in Malaysia, of which 62 cases were treated in the General Hospital Kota Bharu, Kelantan, i.e. 38% of the total cases for Peninsular Malaysia (Table I). The male to female ratio for these cases was 1.8:1. The age distribution (Table II) of tetanus cases showed that nine (14.5%) were in the 0 – 5 years are group; of these seven were neonates. 15 (24.2%) were in the 10 – 20 years age group; 18 (29%) in the 25 – 40 years age group (Fig. 1).

It is interesting to note the absence of any case between two month and four years of age. Between 10 – 20 years of age, the cases were evenly distributed throughout the age block.

Of the 62 cases of tetanus that were treated in the General Hospital Kota Bharu, 39 cases needed ventilation. There were seven deaths and

TABLE I

NUMBER OF TETANUS CASES IN KELANTAN COMPARED WITH PENINSULAR MALAYSIA

Year	Kelantan*			Peninsular Malaysia**
	Male	Female	Total	Total number of cases
1979	9	3	12	32
1980	7	2	9	40
1981	3	6	9	28
1982	9	5	14	20
1983	3	6	9	19
1984	9	0	9	23
	40	22	62	162

Male to female ratio 1.8 : 1.

Source: *Records from Intensive Care Unit, General Hospital, Kota Bharu.
**Ministry of Health, Epidemiological Unit.

TABLE II

AGE DISTRIBUTION OF TETANUS CASES ADMITTED TO GENERAL HOSPITAL KOTA BHARU (1979 – 1984)

Age (yrs)	Number of cases	Percentage
Below 2 months	7	11.3
2 months – 4 yrs	0	0.0
4 – 9	6	9.75
10 – 19	15	24.2
20 – 29	8	12.9
30 – 39	12	19.4
⩾40	14	22.5
Total	62	100.0

all these occurred in the ventilated patients. One case died due to pulmonary complication and the other six cases due to cardiovascular complications of autonomic imbalance during the second week of treatment. Four of the deaths occurred in patients below 17 years age and three in patients above the age 55 years. A history of injury was obtained from only 44 cases out of 62, i.e. 71% of the cases. The rest did not give any history of injury nor was a wound found. Most of the cases were from rural areas and did not know their immunization history.

DISCUSSION

The Public Health Service Advisory Committee of the United States has stated that the need for active immunization against tetanus is universal, and that such immunization is the only way by which tetanus may be eliminated as an important health problem.[3] There is no controversy about the efficacy of immunization with adsorbed toxoid Antenatal immunization of mothers will help in the placental transfer of tetanus antibodies, which will confer some passive immunity on the neonates.[3]

During the period 1979 – 1984 there were seven neonatal tetanus cases treated in General Hospital Kota Bharu. This was much lower than the number of neonatal tetanus treated in the same hospital during 1975–1979, where there were 27 cases and five deaths.[1] It appears that although the antenatal immunization programme in Kelantan has contributed to a reduction in the number of cases of neonatal tetanus, it has not yet been effective in eliminating the problem.

The striking absence of tetanus cases among hospital admissions aged two months to four years suggest that the primary immunization programme inclusive of the first booster is much more effective in Kelantan than the antenatal programme. Fifteen of the cases were in age group of 10 – 20 years. This group should have been covered by booster doses of toxoid given in school at seven and 13 – 14 years.

The immunization programme for 13 – 14 years age group was only started in 1982. We have no data on percentage cover of school-aged children with tetanus booster doses. Also we were unable to obtain any history of immunization from our cases. It is very important to cover this age group with adequate immunization because these young patients are the ones very likely to get autonomic disturbances accompanying tetanus,[3] and this worsens the prognosis. To prevent wastage of young lives, it is worth intensifying our efforts to cover this group.

Another risk group is the 25 to 40 years of age, particularly rural farmers whose nature of work exposes them to the higher risk. This shows lack of public awareness about tetanus, and how it can be prevented by timely immunization. It is not possible to cover this group by any national immunization programme. However, the high-risk groups should be made more aware of the dangers of tetanus and its mode of transmission.

A recent textbook of medicine stated that 20% of the patients with tetanus have no history of any wound.[2] In our study, we found that 29% of our patients gave no history of injury nor could any wound be found on them. It is generally

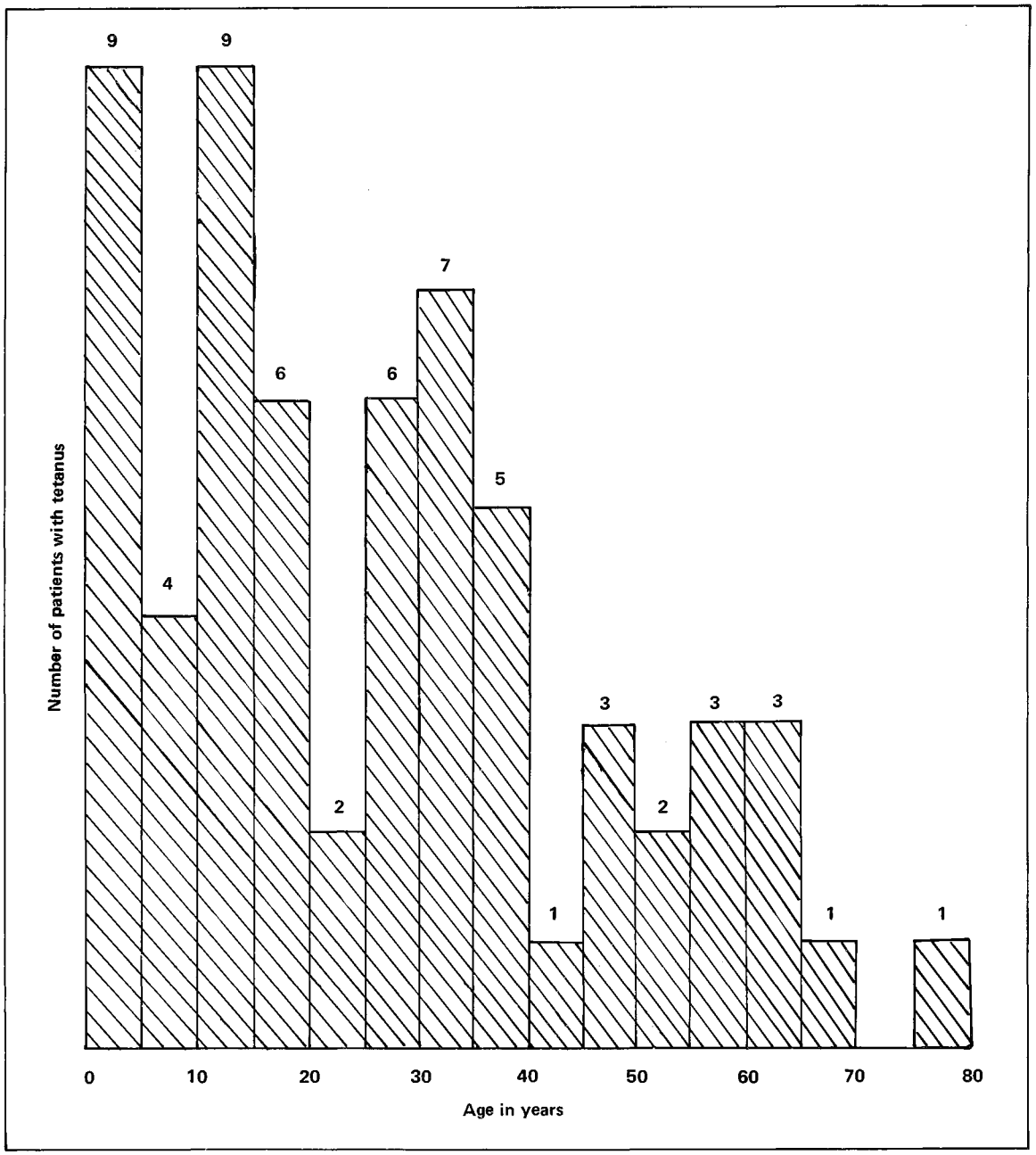

Fig. 1 Distribution of tetanus cases admitted to General Hospital Kota Bharu (1979 – 1984).

agreed that certain features increase the likelihood of getting tetanus, e.g., heavy contamination of the wound with soil or animal excreta, foreign body in the wound, deep puncture wound like those caused by a nail prick.[3] The relatively high incidence of tetanus in Kelantan suggests that every wound should be managed as 'tetanus prone', and be given appropriate toxoid doses.

In many articles, it has been noted that males are more frequently affected than females in the ratio of 2.5:1.[5] In our study, the male : female ratio of 1.8:1 may be due to more females working in the fields. Our study showed a case fatality rate of 11.2% which compares with a large study reported in 1980 by Trujilo *et. al.*,[6] which reported a case fatality rate of 11%.

CONCLUSION

In Kelantan, although this programme has been successful in reducing the number of cases, it has still not eliminated the problem. There is a need to intensify the programme particularly for the antenatal mothers and to increase public awareness of the danger of contracting the disease among those exposed to particular risks e.g. injuries contaminated with soil, animal excreta, foreign bodies, etc.

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