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Knowledgeon Snake Bitediagnosis &Management among Internees in a Government Medical College of Kolkata

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Abstract:
Background: *Snake-bite is a life-threatening medical emergency. Snake bite treatment in developing countries is a complex issue with many exacerbating problems, such asunscientific indigenous management, long travel time and resource scarce health care setting. As time is very crucial, it's very essential that treating physician should have adequate knowledge to save precious lives of the victims.West Bengal has a long-standing reputation for having a serious snakebite problem.*
Objective: *The present study was designed to assess the knowledge of snake bite diagnosis & management among junior doctors working in a government medical college, Kolkata.*
Methodology:*An observational, cross-sectional study was conducted among 144 internees ofR.G.Kar Medical College, Kolkata during June-July 2015. A pre-designed and pre-tested questionnaire was administered to the participants.*
Result:*Mean age of participants was 23.89±2.26 years. Among participants 33.3% correctly knew that 70% of all snake bites are non-poisonous; 23.6% rightly said the number of bites did not indicate poisonous bite; 45.83% had the correct knowledge regarding type of venom of all the three species;48.6% participants correctly knew that commonest local sign of poisonous snake bite was pain & swelling; 30.6% internees correctly knew that prolonged clotting time was the early hematotoxic sign while 36.1% of the respondents said correctly that ptosis was the early neurotoxic sign. Only 13.9% said correctly that skin test was of no value. 41.7% respondents correctly answered that urticarial rash is the early sign of AVS reaction. 52.8% internees correctly knew the dose of AVS while 59.7% participants said correctly that AVS is available in all government hospitals.*
Conclusion:*While timely and adequate intervention may save precious lives, lack of proper knowledge found in the present study may take a toll of avoidable deaths. So a practical oriented training of the internees, about diagnosis and management of poisonous snake may reduce the mortality and morbidity of the snake bite victims as well as reduce unnecessary use of AVS in nonpoisonous snakebite and will save precious AVS for appropriate patients.*
Key words:*Snakebite, management, knowledge, Internees, Kolkata.*

I. Introduction

Snake-bite is a life-threatening medical emergency. It occurs frequently among rural people, especially those working in the fields. In India, an estimated 35 000–50 000 lives are lost annuallydue to snake-bite.[1]West Bengal has a long-standing reputation for having a serious snakebite problem.[1] The area's principal snakes of medical importance are the Russell's viper (Daboiarusselii), spectacled cobra (Najanaja), monocled cobra (Najakaouthia), common krait (Bungaruscaeruleus), Wall's Sind krait (Bungarussindanuswalli), and banded krait (Bungarusfasciatus).[1,2]

Though snakebite remains a medical condition of the rural poor in developing countries yet, western developed countries largely produce textbooks and guidelines for treatment of snakebite. These guidelines are probably effective in a developed country with easy access to advanced medical facilities but the picture in developing countries are quite different. Snake bite treatment in developing countries is a complex issue with many exacerbating problems, such asunscientific indigenous management, long travel time and resource scarce health care setting. That's why, it is of utmost need that doctors should have adequate knowledge regarding snake bite and its management. With this background the present study was formulated to assess the knowledge status of junior doctors working in developing country.

II. Methodology

It was anobservational, cross-sectional study, conducted at R.G.Kar Medical College, Kolkata duringJune-July 2015 with the objective of assessing the knowledge status of Internees regarding snake bite management. A total of 144 internees out of 148 were included in the study, as 4 of them not consented.A pre-designed and pre-tested questionnaire was administered to the participants. The questionnaire consisted of 18 multiple choice questions with single correct response. The questions covered critical knowledge areas ofsnake bite management including knowledge regarding poisonous and nonpoisonous snake bite, types of venoms and symptoms of envenomation, Anti snake Venom Serum (AVS) treatment and AVS reaction, support drugs. The data were compiled& analyzed using SPSS version 16.

III. Result

144 Internees of R.G.Kar Medical College were participated in the study; mean age was 23.89±2.26 years. Among the Internee 48 (33.3%) correctly knew that 70% of all snake bites are non-poisonous; 70(48.6%) Internees said that two bite marks would be diagnostic of poisonous snake bite whereas34(23.6%) rightly said that there were no hard & fast rule (Table 1).

90(62.5%) interns answered correctly that venom of Cobra was neurotoxic while 102(70.8%) said correctly that Roussell's viper venom washematotoxic and that of Krait was neurotoxic. But, 66.(45.83%) respondents had the correct knowledge regarding type of venom of all the three species. 70(48.6%) participants correctly knew that commonest local sign of poisonous snake bite was pain & swelling;62(43.1%) respondents correctly said that Krait bite is exceptional because of absence of local sign. 44(30.6%) internees correctly knew that prolonged clotting time was the early hematotoxic sign while 52(36.1%) of the respondents said correctly that ptosis was the early neurotoxic sign. (Table1)

Fifty percent of the internees said that skin test is mandatory before anti snake venom serum (AVS) therapy whereas 20(13.9%) said correctly that skin test was of no value. 60(41.7%) respondents correctly answered that urticarial rash is the early sign of AVS reaction while severe bronchospasm, cardiac arrest and pain in infusion site were answered by 56(38.9%), 20(13.9%) and 8(5.6%)respectively. 78(54.2%)participants said correctly that AVS reaction could be managed at any hospital whereas 46(31.9%) said that it can be managed at tertiary hospitals only. 26(18.1%)internees correctly knew that AVS should be administered by rapid intravenous infusion whereas 54(37.5%) said slow IV infusion, 40(27.8%) local injection & intramuscular injection and 24(16.7%)answered local injection & intravenous infusion. 76(52.8%) internees correctly knew that 8 to 10 vials of AVS is required in average Indian snake bite while 30(20.8%) and 10(6.9%) said the dosage as 2 vials and 5 vials respectively. 86(59.7%)participants said correctly that AVS is available in all government hospitals. (Table 2)

78(54.2%) study participants had the correct knowledge that intra muscular Adrenalineinjection is the drug of choice for management of AVS reaction whereas 44(30.6%) internees correctly knew that sub cutaneous Adrenalineinjection is the drug of choice to prevent AVS reaction. 64(44.4%) of the respondents correctly said that Neostigmine& Atropineinjection is to be given in neurotoxic bite. (Table 2)

IV. Discussion

The objective of the study was to assess the knowledge of internees regarding snake bite management. The knowledge of internees were studied as they were fresh from their formal education, their knowledge could reflect flaws in their curriculum, if any. Other studies have shown the reliance, during medical education, on Western textbooks and inappropriate local, non-clinical sources, resultingserious methodological flaws in approaches to snake bitetreatment.[1,2,3,4,5]

The present study revealed that only 23.6% internees rightly said that there was no hard & fast rule in number of bite marks to diagnose poisonous or non-poisonous snake bite whereas 48.6% internees said that two bite marks would be diagnostic of poisonous snake bite. That indicates they may miss poisonous snake bite which would not have two bite marks leading to complication or death of patients which could have been avoided. Another study showed that bite marks with 2 puncture wounds were regarded as inconclusive evidence as towhether the biting species was venomous or non-venomousby 79% of respondents which was higher than this study.[1] The sample size of that study was only 42 & study participants were selected physicians and not the junior doctors, might be the reason for the disparity.

Only 30.6% of the internees correctly knew that prolonged clotting time was the early hematotoxic sign while 36.1% of the respondents said correctly that ptosis was the early neurotoxic sign. The findings indicated that majority of internees could not identify early signs of envenomation which is very important time to give AVS or other supportive measures to reduce binding of the venom to the tissue and the impact there of.

13.9% internees said correctly that skin test was of no value whereas 50% internees said thatskin test is mandatory before AVS therapy which will cause unnecessary delay and confusion in lifesaving AVS therapy while the guidelines say clearly that 0.25ml of subcutaneous adrenaline is to be injected before infusing AVS

and skin test is of no value but causing unnecessary delay and confusion in infusing AVS.[12-16] 27.8% of the respondents opted for local injection & IM injection of AVS and 16.7% for local injection & IV infusion. Only 18.1% of the participants correctly said that AVS should be administered by rapid IV infusion whereas 37.5% said slow IV infusion.Which indicates that 81.9% of the internees would not be able to manage snake bite victims properly in spite of adequate availability of lifesaving AVS. Another study by I D Simpson revealed that 87% of doctors opted for i.v. as the AVSadministration route and 13% opted forlocal or i.m. administration.[4] Most doctors (59%) wouldadminister the AVS over 1 h with 286 (41%) administering ASVover 2 or 4h.

The current focus on increasing antivenom supply is only one potential solution to snake bite mortality. Providinggreater quantities of antivenom, even with better quality,to a pattern of usage as demonstrated by this survey isunlikely to improve patient outcomes. The primary findingsof this study suggest that the current approach to snake bite treatment education is sub-optimal and indicates the urgent need for comprehensive snake bite management training and contextually relevant protocols.

V. Conclusion

Snake bite cases are common at all levels of government & private health care delivery in West Bengal.While timely and adequate intervention may save precious lives,lack of proper knowledge found in the present study may take a toll of avoidable deaths. So a practical oriented training of the internees, about diagnosis and management of poisonous snakebite by Community Medicine Department, during their rural posting may reduce the mortality and morbidity of the snake bite victims as well as reduce unnecessary use of AVS in nonpoisonous snakebite and will save precious AVS for appropriate patients.

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Tables& Diagrams:

Table 1.Distribution of participants according to knowledge regarding snake bite diagnosis. (n= 144)

Areas of snake bite issue	Knowledge status	
	Correct No.(%)	Incorrect No.(%)
Prevalence of snake bite & bite mark		
Prevalence of poisonous snake bite in India	48(33.3)	96(66.7)
Number of bite mark in poisonous snake bite	34(23.6)	110(76.4)
Type of venom in different snakes		
Cobra	90(62.5)	54(31.5)
Russell's viper	102(70.8)	42(29.2)
Krait	102(70.8)	42(29.2)
Symptom of envenomation		
Commonest local sign of poisonous bite	70(48.6)	74(51.4)
Local sign of Krait bite	62(43.1)	82(56.9)
Early neurotoxic sign	52(36.1)	92(63.9)
Early hematotoxic sign	44(30.6)	100(69.4)

Table 2.Distribution of study participants according to knowledge regarding snake bite management. (n= 144)

Knowledge regarding snake bite management	Correct No (%)	Incorrect No (%)
Skin test before AVS therapy	20 (13.90)	124 (86.10)
Early sign of AVS reaction	60 (41.70)	84 (58.30)
AVS reaction can be managed at	78 (54.20)	66 (45.80)
Route of AVS administration	26 (18.10)	118 (81.90)
Dosage of AVS in average Indian snake bite	76 (52.80)	68 (47.20)
Polyvalent AVS is available at	86 (59.70)	58 (40.30)
Drug of choice to prevent AVS reaction	44 (30.60)	100 (69.40)
Drug of choice to treat AVS reaction	78 (54.20)	66 (45.80)
Inj. Neostigmine & Atropine is to be given for	64 (44.40)	80 (55.60)

Fig 1. Distribution of study participants according to knowledge regarding types of venoms of different snakes.

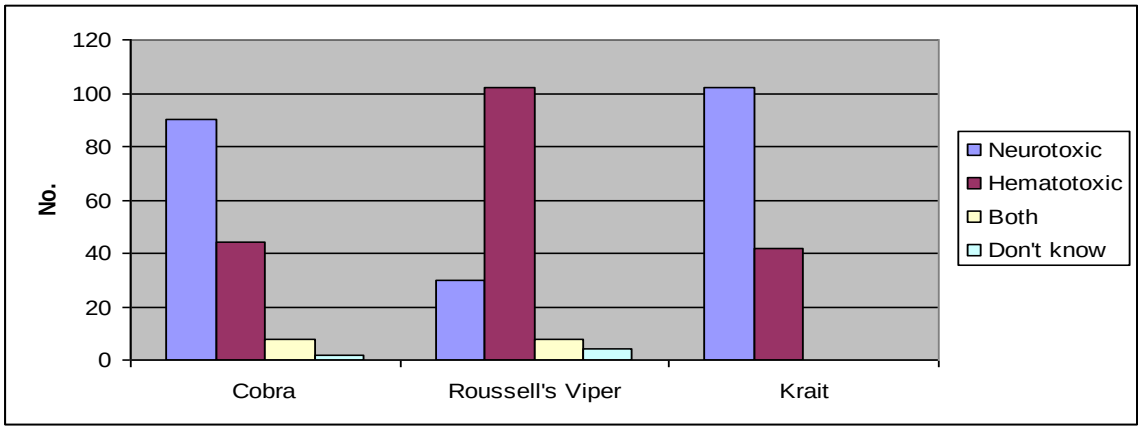

Fig 2. Pie chart showingdistribution of study participants according to knowledge regarding AVS dosage.