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SNAKE BITE VICTIM TREATMENT OUTCOME IN TERTIARY CARE SETTING IN KUMAON REGION OF UTTARAKHAND

Pharmacology

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ABSTRACT

Background: Kumaon region of Uttarakhand has a wide array of snakes. According to national health profile 2016 report on state wise cases and death due to snake bite was 167 and 1 respectively in Uttarakhand 2015 (Jan- December).This led to enquire this statistical disparity in spite of high prevalence of snake bite cases.
Aim: To asses treatment outcome of Snake bite victim in tertiary care setting.
Material And methods: Outcome was assessed in terms of clinical status at the time of discharge and duration of hospitalization.
Results: Dose range of anti snake venom (ASV) for all snake bite victim was 10 -20 vials. 86.36%% case recovered and 13.6% died.
Conclusion: Timely appropriate dose of anti snake venom administration has led to better outcome for which transportation of snake bite victim to appropriate health facility with in golden hour is imperative.

KEYWORDS

Snake Bite, Kumaon, ASV

INTRODUCTION:

Snake bite is an infinitesimal event however the aftermath of it is grave. It is an occupational hazard that impact mainly farmers, plantation workers, herders and laborer. (1) Forest and fields are habitat for snakes. Kumaon region of Utarakhand has a wide array of snake mostly poisonous one with dense forest and mountains.

According to National health profile- 2017(2) released by Central bureau of health intelligence of Ministry of Health and family welfare reported 169090 cases of snake bite and 1219 death due to snake bite in India in 2015 and same NHP-2017 also reported only 167 cases and only 1 death in 2015 from whole Utarakhand, a state full of dense forest with damp hills. The actual incidence of snake bite might be much higher as majority of cases occurring in rural population go unreported (3). This statistical disparity has important implication. This underreporting of cases is because many patient are treated by traditional healers (4) and dies outside health facilities. Still cases which reach our tertiary care center are managed by standard protocol (5). As the only specific and definitive treatment of snake bite victim is timely administration of anti snake venom (ASV). (6)

But its less utility in Utarakhand is associated with lack of evidence for optimal dosing schedule, high cost, and limited availability, inability to reach to hospital and less public awareness. (7).With this background the study was planned with the aim to assess the outcome of snake bite victims reaching tertiary care centre in Kumaon region of Utarakhand.

MATERIALAND METHODS:

This retrospective observational study was conducted at Government medical college Haldwani associated Dr Susheela tiwari government tertiary care hospital .The study was approved by Institutional Ethics Committee.

All patients of snake bite with documented use of ASV during the period of June 2016 to July 2017 were included in the study. Patient with diagnosis of envenomation from arthropods, or other animals were excluded. The information was recorded in a structured Performa from patient bed –head ticket (BHT). The collected information were categorized into type and site of snake bite; time lapsed from the time of bite till the time of hospital admission, clinical characteristics of snake bite, severity, time and quantity of antisnake venom used, outcome in terms of duration of hospitalization, and clinical status at discharge. All data were entered and analyzed in Microsoft excel sheets 2007.

RESULTS

During the period of June 2016 to July 2017, total of 66 snake bite victim were reported to our tertiary care hospital emergency unit. Snake bite predominantly affected males and out of all 26 female 8 were pregnant even. The most common site of bite was lower limb. Majority of bite (69.6%). was of vasculotoxic in nature. Maximum number of case encountered during June to September of year, reflecting a seasonal disease.(Figure 1)

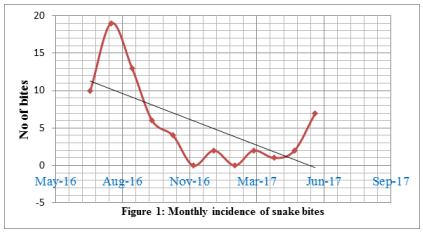
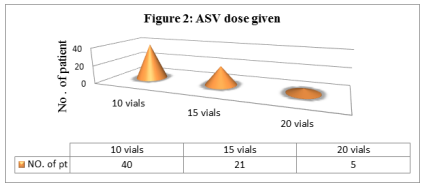


Figure 1: Monthly incidence of snake bites

That could be because in mansoon season with onset of mansoon rain water entered the snake pits force them to find refuge elsewhere. This causes an increased confrontation with humans as the snakes move into houses or storage spaces and increased bite rate. Out of all bite most of the bite occurred in midnight between 1 am-4 am.

Clinical characteristics of snake bite victim was in range from mild cellulitis (51.5%) to severe respiratory difficulty (25.7%) . time elapsed from time of bite till the time of hospital admission has been found to play very crucial role in deciding the outcome in case of snake bite. Maximum patient arrival in hospital after the bite was 3-6 hours in our study. The maximum total dose given to patient in our study was 20 vials. Majority (40) of cases has been given 10 vials ASV. (Figure 2)



In our study 85 % case of snake bite were recovered (Figure 3) and 14% died, out of all died case maximum cases were with neurotoxic type of bite. Over all mean duration of hospitalization were 5.4 ±3.2 days with 25.75 % Patient need artificial ventilation.

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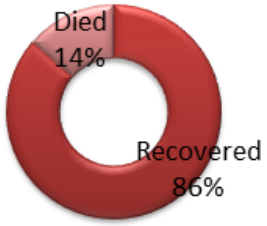
Figure 3: Outcome of patients



DISCUSSION:

The tropical climate of the Utarakhand state plays a perfect host to venomous snakes. Kumaon region is an ideal dwelling place for the spectacled cobra, common krait, Russell's viper and saw scaled viper, also known as ' Big Four', the deadliest venomous snakes of the country. Snake bite is the common cause of morbidty and mortality (8). During the study we found male preponderance, similar finding was reported by former authors (9,10,11) that may be because of more number of male workers working in the field and were engaged in agriculture and outdoor activities hence prone for exposure to snake bite. The most common site of snake bite was lower limb as lower limb has maximum probability of touching ground whether working or standing or sitting. This finding was also similarily reported by other author. (11,12). At the time of presentation 69.6% of bite were of vasculotoxic nature followed by 30.3% were of neurotoxic nature as observed by Shradha M et al (11), virendra .C patil (13), Majority of bite encountered during monsoon season of year i.e from June to September as in most studies like Gimkala et al, and kakaria et al (8,12,14) due to flooding of dwelling of snake force them to come out and cause accidental human victimization.

Maximum bite occurred in mid night i.e 1am- 4am followed by between 5 pm- 9pm and 4 am-9am that may be because of poor visibility in night and large area of dense plantation without street light or lamp. Similar finding was presented by many others (14, 15, 16, and 17) and definitely due to nocturnal nature of snake.

Out of all snake bite victim 51.5% cases had cellulitis at the site of bite, 45.4% cases directly presented as bleeding, & 28.7% cases with ptosis and 25.7% cases with respiratory difficulty and 19.6% cases with haematuria which is consistent with virendra C Patil (13)

Anti snake venom (ASV), its rational and timely use is the only definite treatment to neutralize venom in circulation and in tissue fluid to save life in snake bite victim. According to national protocol (5), the recommended initial dose is 10 vials (100 ml) of ASV. If there is no improvement or deterioration in muscle power, this is followed by another 10 vials within 2 h (in all 20 vials. Children should receive same ASV dosage as adult. The total dose of ASV administered in our study patient ranged from 10 to 20 vials, which was in accordance to national protocol.

Virendra. C patil (13) stated use of ASV in dose range of 15-25 vials and 30 vial & more used in another study (11)) dose were 50 and 90 vials in sharma et al (18) agarwal et al (19) respectively. This shows gross variation in ASV dose administration and lack of evidence in support to national guideline, which is associated with differential outcome in managing snake bite victims in different region of India. In our study outcome of snake bite victim was 85% patient recovered and 14% died mainly because of respiratory difficulty specially those patient who already brought late with critical condition. The reason could be non availability of transport and first consultation with traditional healers .The use of traditional medicine for snakebite is a feature of most areas of the developing world where venomous snakes are prevalent (4).This lead to lag time in reaching to appropriate health care centre and ruin the golden period of circumstances.

Snake bite is an important preventable health hazard in India (20). With its population over a billion people, accounted for the highest estimated number of bites and death for a single country like india (21). Time plays a great factor in the cure of snake bite. Maximum patient reached to hospital after the bite within 3-6 hour after bite, which is closely comparable with others like Sharma et al (18). and Kakaria as et el (12) and also by Anti et al(22) , Kularatne (23)and Harssor et al(24) who reported a time range from 0.5 to 10 hour , however, in the later years (2009) Instead of loosing time in bizarre remedies, victims were probably rushed to the hospital. Improvement in early referral and appropriate care will only occur when traditional healers are integrated into primary health care and hospital based health care system. Unfortunately snake bite envenomation has been designated as major neglected disease of 21st century.

CONCLUSION:

The management practices of snake bite cases are adequate at our tertiary hospital. But there is need to prepare guideline especially regarding dose of ASV with supportive pharmacotherapy to reduce morbidity & mortality as well as there is need of adequate documentation of adverse reaction related to ASV use which could be one of cause of death after snake bite. This study provides insight into current clinical management & outcome with respect to time & dose of ASV administration. Every victim must need to be transported to treatment centre where ASV is available within first hour of bite. All PHC should have sufficient supply of ASV with trained health care personnel. There should be campaign to provide awareness regarding snake bite. An ounce of prevention is worth a ton of first aid.

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REFERENCES

1. Yogendra Gupta YK, Peshin SS (2014) Snake Bite in India: Current Scenario of an Old Problem. J Clin Toxicol 4: 1000182.
2. .National health profile 2017,Central bureau of health intelligence. Directorate general of health services. Ministry of Health & Family welfare. Pg 178. Www.cbhighf.nic.in
3. Rakesh Nigam, D. Kosam, Miltan Debbarma3 Madhumita Murthy. 2015. Retrospective study of neuroparalytic snake envenomation in a tertiary care hospital of chhattisgarh . J of Evolution of Med and Dent Sci. Vol. 4/ Issue 71/ Sept 03,
4. Anadi Gupt, Tarun Bhatnagar BN, Murthy, et al. (2015) Epidemiological profile and management of snakebite cases – A cross sectional study from Himachal Pradesh, India. Clinical Epidemiology and Global Health.;3.
5. National snakebite management protocol, India. (2015). Available at www://mohfw.nic.in (Directorate General of Health and Family Welfare, Ministry of Health and Family Welfare, India).
6. SK Rana, C Nanda, R Singh, S Kumar (2015). Management of Snake Bite in India – Revisited. JK SCIENCE. Vol. 17 No. 1, Jan - March
7. Patil TB. Snake bite envenomation: A neglected public health problem in India. Med J DY Patil Univ.2013;6.
8. Aruna gimkala , G.V Ramana Rao, Omesh kumar bharti.Transporting snake bite victims to appropriate health facility with in golden hour through toll free emergency services In india , Save life. International journal of tropical disease & health. 2016;17(2): 1-12.
9. Anil A, Singh S, Bhalla A, Sharma N, Agarwal R, Simpson ID. Role of neostigmine and polyvalent antivenom in Indian common krait (Bungarus caeruleus) bite. J Infect Public Health. 2010;3:83–7.
10. Aggarwal PN, Aggarwal AN, Gupta D, Behera D, Prabhakar S, Jindal SK. Management of respiratory failure in severe neuroparalytic snake envenomation. Neurol India. 2005;49:25–8
11. Shraddha M. Pore, Sunita J. Ramanand, Praveenkumar T. Patil, Alka D. Gore,1 et al . A retrospective study of use of polyvalent anti-snake venom and risk factors for mortality from snake bite in a tertiary care setting. Indian J Pharmacol. 2015 May-Jun; 47(3): 270–274
12. Kakaria .AS. Et al A study of outcome of neuroparalytic snake bite patient treated with fixed dose of anti snake venom. Int .J.Res.Med .Sci .2014;2(4): 1676-1682.
13. Virendra .C . Patil, Harsha patil et al. Clical profile And outcome of envenomous sanke bite in tertiary care centre in western maharastra. Int. J. Med. Public health .2011;1(4).
14. Sanjib .K.Sharma et.al, Impact of sanke bite & determinant of fatal outcome in southeastern nepal. Am. J. Trop. Med. Hyg. 2004;71(2): 234-238.
15. Sawai, Yoshi, Manabu, Honma. Snakebites in India. The Snake. 1975;7(1):1-16.
16. Anjum, Epidemiological profile of snake bite at tertiary care hospital, North India. J Forensic Res. 2012:3-4
17. Reddy PPK, Senthilvelan. A study of clinical profile of snake bite. Int J Modn Res Revs. 2015;3(10):964-8.
18. N Sharma, S Chauhan, S Faruqi, P Bhat, S Varma. Snake envenomation in a north Indian hospital. Emerg Med J 2005; 22(2): 118-20.
19. Agarwal PN, Agarwal AN, Gupta D, Behera D. Management of Respiratory failure in severe Neuroparalytic Snake Envenomation. Neurology India 2001; 49: 25-31.
20. Sharma SK, Bovier P, Jha N, et al. Effectiveness of rapid transport of victims and community health education on snake bite fatalities in rural Nepal. Am J Trop Med Hyg. 2013;89(1):145-50.
21. Goldstein JC. Bite wounds and infections,the University of Chicago. 1991;633.
22. Anil A, Singh S, Bhalla A, Sharma N, Agarwal R, Simpson ID. Role of neostigmine and polyvalent antivenom in Indian common krait (Bungarus caeruleus) bite. J Infect Public Health. 2010;3:83–7.
23. Kularatne SA. Common krait (Bungarus Caeruleus) bite in Anuradhapura, Sri Lanka - a prospective clinical study 1996-98: Postgrad Med J. 2002;78:276–80.
24. Harsoor SS, Gurudatta CL, Balabhaskar S, Kiranchand N, Bhosale R. Ventilatory managent of patient with neuroparalytic envenomation. Indian J Anaesth. 2006;50:452–5.
25. Kshirsagar VY, Ahmed M, Colaco SM. Clinical profile of snake bite in children in rural India. Iran J Pediatr. 2013 Dec; 23(6): 632-6.PMID: 24910739.
26. 2. Warrell DA. Snake bite: A neglected problem in twenty-first century India. Natl Med J India 2011; 24: 321-4.