

Assessment of Judicious Use of Immunologicals in Post Exposure Prophylaxis of Animal Bite Cases by Medical Officers in Government Health Centers in an Urban Area of Southern Rajasthan

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Abstract :

Introduction : Rabies is a hundred percent fatal disease with no cure being found till date. Only prompt reporting by the patient and correct prophylactic measures applied by the treating doctor can save a precious life in time. In Rajasthan, under Mukhyamantri Nihshulk Dawa Yojna (MNDY), medicines including anti rabies vaccines and immunoglobulin are dispensed free of cost at all government health centers hence cases of animal bite are first reported to the nearest government health center, the medical officers posted there should be able to give timely and appropriate Post Exposure Prophylaxis (PEP). Assessment of Knowledge and practice of the government medical officers regarding management of animal bite cases will help to know whether the resources are utilized properly. **Objectives** : To assess the Knowledge and practice of the medical officers regarding management of animal bite cases in the government health centers in urban Udaipur, identify any gaps there in and recommend rectification measures for the same. **Method** : cross sectional qualitative study was carried out on 44 Medical Officers posted at 17 government urban health centers in Udaipur urban area. A semi structured pre tested questionnaire was the tool. The data was analyzed on SPSS16 version. **Results** : Only 68.2% respondents were aware of all modes of transmission of Rabies. WHO wound categorization was known to 54.6% only. 34.1% and 52.3% respondents, respectively did unnecessary prescription of Anti Rabies Vaccines for category I and Immunoglobulin for Category II wounds. WHO guidelines for wound washing, was followed by 11.4% only. Only 25% respondents were following Essen regimen of vaccination correctly and were injecting the vaccine on deltoid. 75% were following the guidelines on vaccination for delayed reporting. Defaulters were managed correctly by 20.6% only. **Conclusion** : Respondents' knowledge about mode of transmission of Rabies, WHO wound classification and correct protocol of management of the animal bite wounds was less than adequate and it lead to improper wound care and inadequate vaccination and was adversely affecting the utilization of government resources.

Key words : Rabies, animal bite, Post Exposure Prophylaxis (PEP), Mukhyamantri Nihshulk Dawa Yojna (MNDY)

Introduction :

Rabies is a hundred percent fatal disease with no cure being found till date. Death usually occurs within a week after the onset of symptoms and signs of Rabies. According to a latest WHO estimate about 50, 000 human deaths due to rabies are reported every year worldwide, out of which 30,000 are from India alone. ^[1] India also has the higher incidence of animal bite/exposures, which is estimated to be 17.4 million per year. ^[2] On the brighter side, it is one of the

few diseases for which effective pre and post exposure prophylaxis measures are available. Prompt reporting by the patient and correct prophylactic measures applied by the treating doctor can save a precious life in time. In urban areas a common man is aware that animal bite, especially dog bite needs medical attention. Cases of animal bite are first reported to the nearest health centre or dispensary hence the medical officers posted there should be able to give timely and appropriate Post-

exposure prophylaxis, the three main components of which are, wound treatment(1/3),anti-rabies vaccine (1/3),anti-rabies serum+advice (1/3)^[1]

The Rajasthan government started Mukhyamantri Nihshulk Dawa Yojna (MNDY) from 2nd October 2011, under this, medicines including antirabies vaccines are dispensed free of cost at all government hospitals and health centers and vaccine along with anti-rabies serum at all tertiary care hospitals.

This initiative by the government has minimized the out of pocket expenses of the people but assurance of quality care also depends on the skills of the service providers. With the investment in health by the government and improved awareness of people over the time about gravity of animal bite, it is now time to assess the Knowledge and practice of the doctors posted in government health centers about management of dog bite cases in order to make sure that the resources are utilized properly.

Hence, this study was conducted with the objectives to assess the knowledge and practice of government medical officers regarding management of animal bite cases and to recommend measures if there was need for improvement.:

Objectives:

1. To assess the knowledge and practice of medical officers regarding management of animal bite cases in the government health centers in urban Udaipur.
2. To identify any gaps there in and recommend rectification measures for the same in order to ensure judicious use of immunological.

Method:

Study design: Cross Sectional qualitative study

Study Area : All governments run dispensaries, Urban PHCs and Satellite Hospitals in Udaipur city

Study period: October 2014.

Study subjects: the government doctors (MBBS and post graduates).

There are 15 government dispensaries and 2 Satellite hospitals in Udaipur city, with 51 doctors posted here in. Telephonic appointment was taken from them in advance and they were visited at the end of their OPD hours. 44 doctors gave consent and

participated in the study.

Study Tool : A semi structured pre tested questionnaire with 25 questions, 19 of them were in the form of problem based exercises with multiple choice options, to assess the applied aspect of the knowledge.

Data Analysis : Data was analyzed using SPSS 16 version. Frequencies along with percentile were tabulated for variables and Chi-square test was applied as the test of significance where applicable.

Result:

The results are based on responses received from 44 respondents. It was observed that most of the respondents (79.6%) knew that besides dog, other animal bites can also cause Rabies but causative agent was identified as virus by 30 (68.2%) only. The knowledge regarding wound categorization and mode of transmission of Rabies was found to be low, then correct WHO wound categorization was known to 24 (54.6) respondents and only 15 (34.1%) were aware that besides the bite of rabid animal, there are other modes also of transmission of Rabies [Table 1]

Table 1: Knowledge of the MOs about Rabies and WHO Animal bite wound categories

| | Knowledge Variable Animals transmitting | Number % |
|---|--|-----------|
| A | Rabies(n=44) | |
| 1 | Dogs | 9 (20.5) |
| 2 | Other animals also | 35 (79.6) |
| 3 | Don't know | 0 |
| B | Causative agent(n=44) | |
| 1 | Virus | 30 (68.2) |
| 2 | Bacteria | 9(20.5) |
| 3 | Other | 5 (11.4) |
| C | Mode of transmission(n=44) | |
| 1 | Bite of rabid animal only | 29(65.9) |
| 2 | Other modes also | 15 (34.1) |
| D | WHO wound category(n=44) | |
| 1 | Correct | 24(54.6) |
| 2 | Incorrect | 20(45.5) |

Figures in parenthesis indicate percentage

Table 2: Knowledge about correct protocol of management of the animal bite wound (n=44)

| | Category I | | | Category II | | | Category II | | |
|----------------|---------------------------|---------------|--------------------|---------------------------|---------------|--------------------|---------------------------|---------------|--------------------|
| | A* | B* | C* | A* | B* | C* | A* | B* | C* |
| | Wound care+ inj.TT** only | A+ inj ARV*** | B+ inj ARS*** * | Wound care+ inj.TT** only | A+ inj ARV*** | B+ inj ARS*** * | Wound care+ inj.TT** only | A+ inj ARV*** | B+ inj ARS*** * |
| No. (%) | 29 (65.9) | 15 (34.2) | 0 | 9 (20.5) | 12 (27.3) | 23 52.3 | 0 | 21 (47.7) | 22 50 |

Figures in parenthesis indicate percentage

*correct protocol, **Tetanus Toxoid, ***AntiRabiesVaccine, ****AntiRabies Serum

$\chi^2=6.95$, df= 2, pvalue =0.031 for correct protocol

The correct protocol of management of the animal bite wound in category I and III was known to 65.9 % and 50% respondents respectively but for category II only 27.3% respondents knew the correct protocol.[Table2]

More than half (59.1%) of respondents were in favor of cleaning the animal bite wound with running water. 25% favoured cleaning for 5 minutes only, while 4.6% felt that 2-3 minutes only was sufficient. A mere 11.4% felt that it should be cleaned for 15 minutes. Their attitude towards suturing and bandaging the wound was less than appropriate. Half (50%) of the respondents felt that if suturing of the wound is needed, it should be done as soon as possible before starting ARS instillation while 25% were not in favour of suturing the wound at all. Only 27.3% respondents advocated simultaneous instillation of ARS and suturing of the wound if needed. Only 29.6% respondents were in favour of not bandaging the wound while 47.7% favoured wound bandaging.[Table3]

Anti-Rabies Vaccine was given on correct schedule and right site, only by 25% respondents. Delayed reporting of animal bite cases were managed correctly by 75% while correct management of defaulters and re exposure cases was

Table 3: Distribution of respondents according to their attitude towards animal bite wound management

| | Wound management | Number % |
|---|--|-----------|
| A | Wound toilet with running water (n=44) | |
| 1 | 2-3 minutes | 2(4.6) |
| 2 | Up to 5 minutes | 11(25) |
| 3 | Up to 10 minutes | 26(59.1) |
| 4 | Up to 15 minutes | 5(11.4) |
| B | Suturing, if needed (n=44) | |
| 1 | ASAP, before starting ARS | 22(50) |
| 2 | While ARS is instilled | 12(27.3) |
| 3 | Not at all | 11(25) |
| C | Bandaging (n=44) | |
| 1 | Yes | 21(47.7) |
| 2 | No | 13(29.6) |
| 3 | Maybe | 10 (22.7) |

Figures in parenthesis indicate percentage

practiced by 20.6% and 29.6% respondents only respectively. 15.9 % respondents came up with different contraindications for Anti Rabies Vaccination. [Table4]

Discussions :

India is endemic for Rabies, with stray animals roaming on streets being a common scene; the prevalence of animal bite is high in India. Animal

Table 4: Correct practice of administering anti rabies vaccine for PEP (as per WHO guidelines)

| | Correct practice | Number |
|---|---------------------------------|-------------|
| 1 | Schedule* | 11/44(25) |
| 2 | Site of administration | 11/44(25) |
| 3 | Defaulter management | 9/44(20.6) |
| 4 | Management of delayed reporting | 33/44(75) |
| 5 | Management of re exposure cases | 13/44(29.6) |
| 6 | Any Contra indications | 7/44(15.9) |

Figures in parenthesis indicate percentage

*Essen Regimen

rabies is also endemic in India with high degree of rabies positivity in laboratory among dogs, cattle, goats, cats, horses & pigs.^[2]

The Government of Rajasthan under the initiative Mukhyamantri Nishulk Dawa Yojna has been providing free antirabies vaccines to all cases reported to government dispensaries and anti-rabies vaccines along with rabies immunoglobulin to all tertiary care hospitals and district hospitals. Looking at the huge monitory resource dedicated for prevention of Rabies and the fact that Rabies can be prevented only by timely and correct management of animal bite wounds that is, proper wound washing, infiltration of rabies immunoglobulin in and around the wound, and a full course of anti-rabies vaccination, a need was felt for assessment of knowledge, attitude and practice of the MOs working in government dispensaries in order to know whether there sources are utilized correctly and in a justified manner. Out of 44 respondents 19 were females, mean age of respondents was 41 years and mean years of practice was 14.23 years. 29 respondents were MBBS and 15 were holding a postgraduate degree or diploma. All had been managing animal bite cases in the OPD.

The present study showed that the knowledge of MOs regarding mode of transmission of Rabies, WHO wound classification and correct protocol of management of the animal bite wounds was less than

adequate. Though 79.6 % were aware that rabies could be spread by bite of animals other than dogs also, but only 68.2% knew that it could be transmitted by other modes also. Ravish Hardanahalli Shankaraiah et al^[3] also observed that knowledge regarding animals transmitting rabies was 66.9% only. Our findings are contrary to the results of R.K. Nayak et al^[4] who observed through their study in Belgaum city that Dog as a source of infection was known to most of the doctors but spread of rabies from other animals was known to only 11% of MBBS and 1% of other doctors only.

There are many dairies in the city, the cattle is allowed to roam on the streets nearby and often they are bit by street dogs, this along with lack of awareness of vaccinating the cattle, increases the possibility of handling of rabid cows and buffaloes by the dairy workers, raw milk consumption is also a common practice in the lower socio-economic status in the city. Only 54.6% respondents had correct knowledge of WHO wound classification. Most of them could label only deep or multiple wounds or wounds on upper part of body, as category III. Ravish Hardanahalli Shankaraiah et al^[3] conducted a similar study and they observed that only 55.9% of respondents knew about proper risk classification of wounds. Harish et al^[5] also found through a similar study that 67.2% of the doctors were aware of the WHO classification of animal bite wounds. Contrary to our findings, R K Nayak^[4], et al found that Only 6% of the doctors knew the WHO categorization of animal bites and hence the indication to give Rabies Immunoglobulin was known to very few doctors (4-7%).

The respondents had significantly better knowledge about correct protocol of management of the animal bite wounds in category I and III as compared to category II (p value < 0.05) .34.1% respondents were in favour Anti Rabies Vaccination for category I cases, which are against the guidelines and leads to injudicious use of vaccines. Majority (52.3%) of respondents were not aware that Rabies Immunoglobulin is not prescribed in category II animal bite wounds hence there are unnecessary referrals of category II cases from the urban health

centers to medical college hospital for immunoglobulin. Chowdhury et al [6] have also observed unnecessary RIG recommendation for category II bite cases by 31.2% interns in their study in Kolkata.

The WHO guidelines^[7] recommend that animal bite wound should be washed with running water for at least 15 minutes. National guidelines^[8] on the other hand recommend it for 10 minutes. In the present study 59.1 % respondents were following National guidelines of animal bite wound toilet and a mere 11.4% were following WHO guidelines and 25% respondents felt that cleaning the wound for 5 minutes was sufficient. This is similar to the findings of Harish B R, et al^[5] who observed that only 10.4% doctors advised the animal bite victims to wash the wound for 15 minute. Singh, et al^[9] on the other hand observed this practice in 47% doctors. The Medical officer's attitude towards care of animal bite wound needs correction. Contrary to the guidelines^[5,6] 47.7 % were in favour of bandaging and 50% in favour of suturing the wound without ARS instillation. This finding is in contrast with another study by Sudershan M K [10] from Bangalore where only 20% dressed the wound. Bandaging is contraindicated this may facilitate entry of the virus in the blood stream.

The WHO recommended schedule of vaccination (Essen regimen) was followed correctly by 25 % respondents only. All were adhering to the first four doses on Day 0, 3, 7 and 14 but many of them called the patient for fifth dose either on Day 21 or Day 30. Sudarshan M K^[9] from Bangalore also observed that only 11% of the medical practitioner knew about the correct schedule of Cell Culture Vaccines (CCV) for post exposure prophylaxis. Only 25% knew that it has to be injected on deltoid, the common practice was injecting ARV on Gluteus Maximus, and this made the vaccine ineffective. In another study conducted at Jamnagar, Gujarat by Bhalla, et al^[11] it was found that 56%

Doctors were administering the vaccine in gluteus region.

Delayed reporting and default after start of treatment is a common practice in patients from urban lower socio economic strata, 75% of the respondents were following the guidelines and prescribing full course of ARV for delayed reporting but only 20.6 % were continuing with the schedule with the defaulters, most of the respondents start fresh schedule of ARV for defaulters, this is a wastage of resources. Due to abundance of street dogs, the prevalence of re exposure to animal bite is high especially in morning walkers and slum dwellers, WHO guidelines recommend only two booster vaccinations with CCV on days 0 and 3 for previously vaccinated re- exposure cases. Only 29.6 % followed the correct management of re exposed patients. Most of the studied respondents were in the practice of prescribing full course of five vaccines to all previously vaccinated re exposed cases. The findings are in line with those of Harish B R, et al^[5], who found this figure to be 25.4%. In another study conducted in India Ravish Hardanahalli Shankaraiah, et al^[3] found that 68.9% of the ARC physicians understood correct management of previously vaccinated and re exposed patients.

PEP should not be denied to any case of animal bite or other contacts of suspected rabid animals, as there is no contraindication for it. In the present study 15.9% respondents though giving prompt wound toilet but were not prescribing inj. ARV to pregnant or lactating women, HIV positive patients, patients with history of allergies or suffering from some acute illness. Such cases were referred to the medical college hospital. Ravish Hardanahalli Shankaraiah, et al^[3], have also observed 85.3% doctors with positive attitude towards Anti Rabies vaccination in pregnant and lactating women.

Limitations:

The sample taken in our study was small and hence generalization would be difficult. The study was limited to Government doctors in urban dispensaries and Satellite hospitals. Only Post Exposure Prophylaxis was focused on. As government, supply of Rabies Immunoglobulin is available only at Medical College Hospital hence

study was limited to practices of wound care and AntiRabies Vaccination only.

Conclusion :

There is a palpable deficiency in knowledge of the medical officers posted in urban government health centers regarding mode of transmission of Rabies, WHO wound classification and correct protocol of management of the animal bite wounds. This deficiency leads to improper wound care and inadequate vaccinations resulting in increased risk of development of human rabies. The unnecessary prescription of AntiRabies Vaccines for category I wounds and unnecessary referrals of category II wounds for Immunoglobulin is a burden on and wastage of government resources and causes stress and anxiety among the patients.

Overall, there is a need for capacity building of the medical officers posted in urban government health centers in order to ensure judicious use of immunologicals.

Recommendations :

- Protocols for post exposure prophylaxis should be displayed in all OPDs.
- Regular CMEs should be conducted by the Community Medicine department at the government medical colleges for all government doctors to update them with current knowledge and skills of management of animal bite cases, with special focus on defaulters and delayed reporting.
- There should be a system of audit for the AntiRabies Vaccines consumed at the government health centres to assure judicial and rational use of the vaccines.

Declarations :

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Conflict of interest : Nil

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