KAP STUDY

Knowledge and practice regarding dog bite management among general practitioners of District Malir, Karachi

Hanif Jan[1], Syed Muhammad Zulfiqar Hyder Naqvi[2], Syed Imtiaz Ahmed Jafry[3], Syeda Nadia Firdous[4]

Abstract

Objective: To assess knowledge and practice regarding dog bite management among general practitioners in a suburban setting.

Methods: This cross-sectional knowledge and practice study was conducted from March 2017 to October 2017 in district Malir, Karachi, and comprised general practitioners conveniently recruited from 32 randomly selected union councils of the district. The participants were interviewed with the help of a self-generated structured questionnaire. Data were analysed in SSPS 21.

Results: Of the 92 practitioners, 67(72.8%) were males, 43(46.7%) had>10 years' experience, and 63(68.5%)were privately employed. The overall mean age of the sample was 43.77±11.5 years. Mean knowledge scores varied significantly across categories of experience only (p=0.020), withthe less-experienced practitioners having significantly higher mean knowledge compared to the seniors.

Conclusion: The experience of the general practitioners significantly affected their knowledge with recent graduates found to have higher mean knowledge scores than older graduates.

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Introduction

Globally, dog bites are estimated to account for tens of millions of injuries annually. In the United States of America (USA), nearly 4.5 million people are bitten by dogs annually and 3-18% among them develop infections resulting in 10-20 fatalities. Other developed countries such as Australia, Canada and France have comparable incidence and fatality rates from dog bites. In developing countries it is estimated that dog bites account for 76-94% of animal bite injuries. Fatality rates of dog bites are higher in low- and middle-income countries (LMICs) than in high-income countries (HICs) due to a lack of post-exposure treatment and inappropriate access to healthcare. In such countries, approximately 55,000 people die annually from rabies, and bites from rabid dogs account for a vast majority of these deaths.[1] Likewise, a review article recently reported canine rabies to cause approximately 59,000 human deaths and over 3.7 million disability-adjusted life years (DALYs) annually.[2]

[1]District Headquarter Hospital, Awaran; [2,3]Department of Community Medicine, Baqai Medical University, Karachi, Pakistan; [4]College of Physicians and Surgeons, Pakistan.
Correspondence: Hanif Jan. e-mail: drhanifbal52@gmail.com

Rabies is endemic in Pakistan and the main vector for rabies is considered to be the domestic dog. Human cases of rabies are mostly diagnosed on clinical grounds only. As human rabies is not a disease to be compulsorily notified in Pakistan, no data on human rabies cases is available, though it has been reported that 2,000 to 5,000 people die of rabies annually, whereas more recently this figure has been estimated to be570 deaths annually.[3]

The main principles of care for a dog bite case include initial medical management, proper cleansing and irrigation of wound, closure of a low-risk wound and keeping it open otherwise, antibiotic prophylaxis in case of high-risk wounds, post-exposure treatment depending on the vaccination status of the dog and the tetanus vaccine administration if prior vaccination has not been done.[1]

In considering a possible treatment modality for rabies patients, it should be kept in mind that rabies is not invariably fatal in animals, but a very small number of humans have recovered. At present, it is not possible to predict which patients are likely to recover, but all survivors, with or without treatment, had a vigorous, early immune response. A suspected case of rabies should be isolated because transmission of rabies virus

through contact should be considered a possibility. Once the diagnosis is confirmed, patients should receive adequate sedation and proper management and care in an appropriate medical facility.[4] Once a person is bitten by a dog, it is only natural to go to a doctor for medical advice and treatment. As most of the practising doctors in Pakistan are general physicians, and not specialists, they are usually the one to whom a patient turns up in case of dog bite. Literature shows that overall the general physicians are not equipped with the necessary knowledge and do not have appropriate practices to adequately treat dog bite patients and to prevent the occurrence of rabies in case the dog is proved to be a rabid one.[5] Thecurrent study was planned to add to the local database and to have an estimation of the current state of affairs in this regard.

Subjects and Methods

The cross-sectional knowledge, attitude and practice (KAP) study was conducted from March 2017 to October 2017 in district Malir, Karachi, and comprised general practitioners (GPs) recruited using convenience sampling from 32 randomly selected union councils of the district. After taking ethical approval from concerned department, Baqai Institute of Health Sciences, the sample size was calculated using 39.5% as the percentage of satisfactory or good practice scores of GPs,[5] with 95% confidence interval (CI) and 10% precision. Those included were GPs at any public or private medical setup who furnished verbal informed consent to take part in the study. House officers, non-practising doctors, doctors with administrative jobs, doctors with no clinical experience or doctors with post-graduation were excluded. The subjects were interviewed with the help

Annexure: Knowledge and practices regarding dog bite management among general practitioners of district Malir, Karachi (Proforma).

Study I.D. .....

Section 1: Demographic Characteristics

1. Gender: ☐ Female ☐ Male

2. Age in years: ....

3. Experience: ☐ <5 years ☐ 5-10 years ☐ >10 years

4. Employment status: ☐ Govt. Employed ☐ Private Employed

Section 2: Knowledgeand Practice Profile

5. Which of the following is the causative agent of rabies?

☐ Virus ☐ Bacteria ☐ Otherd) Don't know

6. Which of the following is the incubation period of rabies virus?

☐ 2-5 Weeks ☐ 3-6 Weeks ☐ Other ☐ Don't know

7. Which of the following is the vector of rabies?

☐ Dog ☐ Cat ☐ Bat ☐ All of them

8. Which of the following are main symptoms of rabies in human?

☐ Agitation ☐ Headache ☐ Vomiting ☐ Hydrophobia

☐ Hallucination ☐ All of them ☐ Don't Know

9. Which of the following vaccines are used for rabies?

☐ Nervous tissue vaccine ☐ Cell culture vaccine ☐ Both of them

☐ Don't know

10. Which of the following anti-rabies vaccination schedule is correct?

☐ 0, 3, 7, 14, 28, 90 ☐ 0, 7, 14, 28, 90 ☐ 0, 3, 7, 14, 28, ☐ Don't know

11. Is there any vaccine for pre-exposure prophylaxis for rabies?

☐ Yes ☐ No ☐ Don't know

12. Should a dog bite wound initially be irrigated?

☐ Yes ☐ No ☐ Don't know

13. For how long dog bite wound should initially be irrigated?

☐ 05 Minutes ☐ 10 Minutes ☐ 15 Minutes ☐ Don't know

14. How should the dog bite wound initially be cleaned?

☐ Soap + water ☐ Soap + water + antiseptic ☐ Don't know

15. In absence of soap, how a dog bite wound should be cleaned?

☐ With plenty of water ☐ Other ☐ Don't know

16. Are pregnancy and infancy contraindicated for rabies post-exposure?

☐ Yes ☐ No ☐ Don't know

17. Is untreated rabies infection always fatal?

☐ Yes ☐ No ☐ Don't know

18. Do you think antibiotic prophylaxis can be considered in rabies management?

☐ Yes ☐ No ☐ Don't know

19. Do you think a patient of dog bite cane be passively immunized by anti-rabies serum?

☐ Yes ☐ No ☐ Don't know

20. Do you think dog bite wound should be sutured?

☐ Yes ☐ No ☐ Don't know

21. Should a dog bite patient be vaccinated after initial treatment?

☐ Yes ☐ No ☐ Don't know

22. Do you think a combination of antibiotic and anti-tetanus should be given to a dog bite patient?

☐ Yes ☐ No ☐ Don't know

23. Do you vaccinate a dog bite patient?

☐ Yes ☐ No (*If yes go to question no. 24*)

24. If yes which type of vaccine do you use for a dog bite patient?

☐ Cell culture vaccine ☐ Nervous tissue vaccine ☐ Both of them

25. By which route of administration do you give rabies vaccine?

☐ I.M ☐ I.V ☐ Intradermal ☐ Subcutaneous

26. By which site do you administrate nervous tissue rabies vaccine?

☐ Anteriorabdominal wall ☐ Deltoid muscle ☐ Other

27. By which site do you administrate cell culture rabies vaccine?

☐ Anterior abdominal wall ☐ Deltoid muscle ☐ Other

of a structured questionnaire developed after relevant literature search.[5-15] The questionnaire consisted of 2 sections; The first section comprised 4 questions regarding socio-demographic information i.e. age, gender, experience and employment type, while the second section comprised 18 questions related to knowledge and 5 questions related to practice of GPs regarding dog bite management (Annexure). A hard copy of the questionnaire was given by the principal investigator which was collected back on the same day after it has been filled up by the subjects.

The data were analysed using SPSS 21. Knowledge and practice scores were calculated separately by giving a score of 1 to a correct response and 0 to an incorrect response. After checking for normality, these scores were then used to compare mean knowledge and practice scores across categories of socio-demographic variables using Mann-Whitney U test. Significance level was set at 0.05.

Results

Of the 92 practitioners, 67(72.8%) were males, 43(46.7%) had>10 years' experience, and 63(68.5%) were privately employed. The overall mean age of the sample was 43.77±11.5 years.

Of the total, 86(93.5%) participants correctly mentioned virus to be the causative agent of rabies whereas 56(60.9%) correctly mentioned the incubation period of rabies to be 3-6 weeks. A majority 49(53.3%) of them correctly identified dogs, cats and bats to be the vector of rabies, whereas 57(62.0%) correctly identified all the symptoms of rabies i.e. agitation, headache, vomiting, hydrophobia and hallucination. Also, 44(47.8%) subjects correctly cited using any of the nervous tissue or cell culture vaccine for rabies. Only 28(30.4%)GPs had accurate knowledge about the anti-rabies vaccination schedule whereas 68(73.9%) of them were aware about the possibility of pre-exposure rabies prophylaxis. Only 41(44.6%) GPs correctly responded that a dog bite wound should be initially irrigated for 15 minutes, whereas only 43(46.7%) correctly knew that a dog bite wound should not be sutured initially. Overall, 31(33.7%) GPs correctly responded that pregnancy and infancy were not contraindicated for rabies post-exposure treatment (Table 1).

Further, 48(52.2%) GPs used to vaccinate their patients. Of these, 18(37.5%) correctly used any of the cell culture vaccine or nervous tissue vaccine; 31(64.6%) correctly used in tramuscular (IM) route to administer rabies vaccine; 30(62.5%) correctly gave nervous tissue vaccine in the anterior abdominal wall; and 22(45.8%) correctly administered cell culture vaccine in deltoid muscle (Table 2).

The mean knowledge scores of the GPs varied significantly only with respect to experience (p=0.020)

Table-1: Knowledge profile regarding dog bite management (n=92).

Variable	no (%)
Should a dog bite wound initially be irrigated?	
Yes	50 (54.3%)
No	26 (28.3%)
Don't Know	16 (17.4%)
For how long dog bite wound should initially be irrigated?	
05 Minutes	14 (15.2%)
10 Minutes	29 (31.5%)
15 Minutes	41 (44.6%)
Don't know	8 (8.7%)
How should the dog bite wound initially be cleaned?	
Soap + water	25 (27.2%)
Soap + water + antiseptic	65 (70.7%)
Don't know	1 (1.1%)
In absence of soap, how a dog bite wound should be cleaned?	
With plenty of water	77 (83.7%)
Other	10 (10.9%)
Don't know	5 (5.4%)
Should a dog bite wound be sutured?	
Yes	36 (39.1%)
No	43 (46.7%)
Don't Know	13 (14.1%)
Should antibiotic prophylaxis be considered in rabies management?	
Yes	67 (72.8%)
No	17 (18.5%)
Don't Know	8 (8.7%)
Should a combination of antibiotic and anti-tetanus be given to a dog bite patient?	
Yes	73 (79.3%)
No	10 (10.9%)
Don't Know	9 (9.8%)
Should a dog bite patient be vaccinated after initial treatment?	
Yes	72 (78.8%)
No	13 (14.1%)
Don't Know	7 (7.6%)
Should a patient of dog bite be passively immunized by anti-rabies serum?	
Yes	71 (77.2%)
No	13 (14.1%)
Don't Know	8 (8.7%)
Are pregnancy and infancy contraindicated for rabies post-exposure treatment?	
Yes	24 (26.1%)
No	31 (33.7%)
Don't Know	37 (40.2%)
Is untreated rabies infection always fatal?	
Yes	61 (66.3%)
No	25 (27.2%)
Don't Know	6 (6.5%)

Table-2: Practice profile regarding dog bite management.

Variable	n (%)
Do you vaccinate dog bite patient? (n=92)	
Yes	48 (52.2%)
No	44 (47.8%)
If yes which type of vaccine do you use for dog bite patient? (n=48)	
Nervous tissue vaccine	20(41.7%)
Cell culture vaccine	10(20.8%)
Both of them	18(37.5%)
By which route of administration do you give rabies vaccine? (n=48)	
I.M.	31(64.6%)
I.V.	2(4.2%)
Intradermal	7(14.6%)
Subcutaneous	8(16.7%)
By which site do you administrate nervous tissue rabies vaccine? (n=48)	
Anterior abdominal wall	30(62.5%)
Deltoid muscle	16(33.3%)
Other	2(4.2%)
By which site do you administrate cell culture rabies vaccine? (n=48)	
Anterior abdominal wall	21(43.8%)
Deltoid muscle	22(45.8%)
Other	5(10.4%)

Table-3: Comparison of Mean Knowledge and Practice Scores across categories of Socio-Demographic Characteristics.

Variables	Knowledge Score Mean±S.D.	Practice Score Mean±S.D.
Age		
<45 Years	11.39±2.94	3.26±0.81
>45 Years	10.88±3.03	2.90±0.94
p-value	0.532	0.124
Gender		
Male	11.30±3.10	3.11±0.93
Female	10.80±2.63	3.09±0.70
p-value	0.340	0.955
Experience		
≤ 10 Years	11.86±2.70	3.22±0.89
> 10 Years	10.37±3.11	2.95±0.86
p-value	0.020	0.153
Employment Type		
Government	11.17±2.62	3.10±0.83
Private	11.16±3.15	3.11±0.93
p-value	0.953	0.878

SD: Standard deviation

where general practitioners with ≤10 years' experience scored significantly higher than those with >10 years' experience. The mean practice scores did not vary significantly across any socio-demographic characteristic (Table 3).

Discussion

The study findings revealed that 93.5% GPs correctly knew about the causative agent of rabies. Literature has reported the number to be 77.5%[6] and 75%.[7] Moreover, 61% of our GPs had correct knowledge. Corresponding number cited in literature is 51.7%.[6]

In the current study, 48% GPs correctly responded that both cell culture vaccine and nervous tissue vaccine can be used for rabies prevention. One study reported 65%,[8] while another reported only 2%.[6] This difference in findings could be due to difference in localities of data collection in both the studies or due to the fact that the results reported in the current study are 8 years recent than the other study.[6]

Further, 30% GPs in the current study had correct knowledge regarding anti-rabies vaccination schedule. Literature has reported 39%[9] and 41.2%.[10] In our study, 73.9% GPs knew that a vaccine should be used for pre-exposure prophylaxis of rabies. A study reported 76.19% of its GPs knew correctly about it.[11]

In the current study, 44% GPs had correct knowledge that a dog bite wound should be irrigated for at least 15 minutes. Literature revealed much higher findings with 68%9 and 75.3%.[5] This difference could be attributed to different characteristics of the study populations as both these studies were conducted in a country other than Pakistan.

In our study, 70.7% respondents correctly knew that a dog bite wound should be cleaned with soap, water and an antiseptic. One study reported 68% and 30% of its participants had correct knowledge that a dog bite wound should be cleaned with soap and water, and with an antiseptic respectively,[9] while another study reported that 75.3% participants correctly knew about cleaning a dog bite wound with soap and water, whereas 22% responded that it should also be cleaned with an antiseptic solution.[5] This difference in findings can again be attributed to different population characteristics. Interestingly, one reported that only 10% of the accident and emergency and minor injury units in the study area routinely irrigated dog bite wounds.[12]

As opposed to 46.7% of GPs in the current study, a study reported that 66.66% GPs were aware about not immediately suturing a dog bite wound[11] and another study reported that 91.3% of the government-employed and 86.3% of the freshly graduated senor residents had accurate knowledge in this reagrd.[13] In a 2017 study, 92.7% participants were aware that immediate suturing of dog bite wound should be not done.[14] This difference in findings can again be attributed to different population characteristics.

In the current study, 79.3% GPs were aware that a combination of antibiotics and anti-tetanus serum should be given to a dog bite patient. A study reported 97% on this count.[11] Much lower findings of 30% were reported by another study[15] though no comparable data were available for knowledge about the use of antibiotics in both these studies. This difference in finding in the latter study can be attributed partly to the fact that all the respondents in that study were males, and there was a difference in population characteristics in both studies.

Moreover, 34.8% of our GPs preferred to use cell culture vaccine which is similar to 31.1% reported by another study.[6] Also, 62% of our GPs knew the correct site of administration of nervous tissue vaccine, which is impressive compared to 29.1% reported earlier.[6] Moreover, 48.9% of our GPs knew about deltoid as the correct site for administration of cell culture vaccine, which, again, is quite high compared to 23.8% reported in a study.[6]

With regard to the rest of the study findings, a comparison could not be made as a thorough search did not reveal any relevant published literature.

The limitations of the current study included a small sample size and a questionnaire that could not be piloted for reliability due to time and resource constraints.

In the light of the study findings, however, efforts are recommended on the part of all stakeholders to improve the current knowledge and practices of GPs regarding dog bite management, especially focussing on those who are not recent graduates and thus are in need of updated information.

Conclusion

The experience of GPs significantly affected their knowledge, with recent graduates reporting higher mean knowledge scores than older graduates.However, the practice scores were not affected by any of the socio-demographic characteristics studied.

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