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CURRENT STATUS OF RABIES PROPHYLAXIS IN DALABA (REPUBLIC OF GUINEA)

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Abstract

Objective: Rabies is a real risk to public health, and remains a zoonosis with considerable medical and economic impact on both humans and animals. The aim of this study was to identify and evaluate rabies control measures applied in the urban township of Dalaba.

Materials and Methods: The methodology adopted was based on consultation of animal health managers and analysis of archives; field surveys of human health services, owner-managers of domestic carnivores and livestock breeders; and evaluation of anti-epizootic measures.

Results: From 2010 to 2017, consultation of executives and analysis of archives revealed the following data: 25 reported cases of carnivore bites, of which 19 were observed by veterinary practitioners; 32 cases of clinical animal rabies recorded, including 18 dogs, 13 cattle and 1 cat; and 103 animal rabies vaccinations. A search of health facility consultation registers showed 400 cases of bites attributable to carnivores, of which 37 victims were subjected to post-exposure vaccination. From 112 carnivore owners surveyed, (50.89%) claimed to be perfectly aware of the disease. To prevent the disease, 14.28% have their animals caged; 22.32% vaccinate and 29.82% vaccinate regularly; 14.29% have their dogs castrated, and 31.25% feed their animals regularly. Among the 210 carnivores registered, 45 dogs (21.43%) and 2 cats (0.95%) have been vaccinated against rabies, giving a vaccination coverage rate of 22.38%.

Conclusion: At the end of this research, we noted that rabies constitutes a real threat and a major zoonosis requiring the adoption of strategies for better control.

Keywords: Rabies; Prophylaxis; vaccination; measures; Dalaba.

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Introduction

The management of rabies is a preoccupation in many countries around the world, as rabies, considered as one of the neglected zoonotic diseases, represents a real threat to public health and remains a zoonosis of current concern. It has a considerable medical and economic impact on both humans and animals. In developing countries, the incidence of rabies remains a major concern, due to negligence in the control of zoonoses such as rabies, unregulated domestication of carnivores considered to be reservoirs and vectors, inadequate health care structures, and difficult public accessibility to rabies treatment facilities. Around 70,000 victims are reported to die of rabies every year worldwide, mostly in African and Asian countries, accounting for up to 95% of human cases, and 15 million people exposed to the risk receive post-exposure treatment [1].

In Guinea, particularly in Conakry, a number of stray dogs represent both reservoirs and vectors of the disease. The disease is generally contracted by humans through the bite of an infected animal. According to the latest statistics, around 8,000 bite cases and nearly 3,000 dog bites have been recorded in Conakry [2-4]. In addition, the uncontrolled circulation of stray and domestic dogs in Dalaba, the extensive breeding of animals, the existence of garbage dumps (places of predilection for stray animals), the inadequacy or even lack of extended animal rabies vaccination and stray dog culling programs would undoubtedly constitute potential factors for the appearance and circulation of rabies. In view of all the above factors, this research project was undertaken with the aim of taking an up-to-date inventory of this zoonosis in the urban commune of Dalaba, in order to identify and assess the control measures in place in the locality.

Materials and Methods

A-Material

Presentation of the study area:

Dalaba is one of the three (3) Prefectures that make up the Administrative Region of Mamou; it is located between 9°45' and 11°35' North latitude, 10°21' and 12°16' West longitude at an altitude varying from 600 to 1425m. Its surface area is 5,750 km2 with a population of 133,677 inhabitants; a density of 23.25 inhabitants per km2 (RGPH3/2014). This population is distributed between the sub-prefectures of: Koba, Mitty, Mafara, Kaala, Ditinn, Kebaly, Bodié, Kankalabé, Mombéya and the Commune Urbaine. It is bordered:

- To the east by the Prefectures of Mamou and Tougué;
- To the west by the Prefecture of Pita;
- To the north by the Prefecture of Labé;
- To the south by the Prefecture of Kindia.

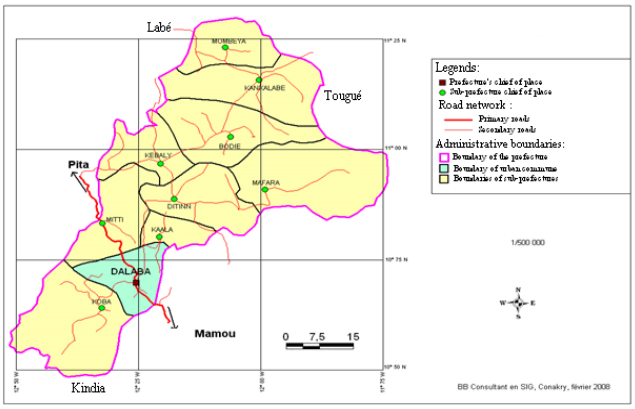

Figure 1: Geographical map of the Prefecture of Dalaba (Source: www.foutapedia.org)

A.3 Animal material

The animal material consisted of domestic carnivores (118 dogs and 92 cats).

A.4 Human material

Owners of dogs and cats (112), breeders of livestock (56).

B. Methods

The aim of this study was to identify and evaluate rabies control measures applied in the urban Commune of Dalaba. To achieve this purpose, the following methodology was adopted:

1. Consultation of animal health managers and analysis of archives
2. Investigation in the field;
3. Evaluation of anti-epizootic measures.

1-Consultation of animal health managers and analysis of archives

The consultation of executives focused mainly on the implemented anti-rabies measures, based on a personal interview. This questionnaire concerned bite cases due to carnivores and clinical rabies cases, surveillance of biting animals, awareness-raising, rabies vaccination of animals, culling of stray carnivores and possibly the counting of domestic carnivores. Finally, an extensive search of activity reports was carried out to find the most relevant statistics.

2- Investigation in the field

All domestic carnivore (dog and cat) owners and livestock breeders were the targeted population. Seven (07) areas were randomly selected, including Tangama, Dalaba Missidè, Hermakonon, Pellel Yéro, Diaguissa, Silly and Kollaguel. Firstly, 16 owners of domestic carnivores were selected in each of the zones chosen (a total of 112 owners of domestic carnivores). Next, 08 livestock farmers were selected in each zone (for a total of 56 livestock farmers).

a. Investigation with health services

On the basis of survey forms, human health managers (the emergency department of the prefectural hospital, the urban health center, private clinics and the pharmacy) were interviewed with the aim of assessing their level of knowledge about rabies, the mode of transmission of the disease, the control measures applied, the management of bite cases due to carnivores, the availability of human rabies vaccine and serum and the means of storing them. In addition, their level of relationship with veterinary professionals for the management of bite cases was also assessed.

b. Investigation with owners of domestic carnivores

This involved discussions with owners on the following points: housing, diet, treatment and prevention measures, etc. In order to determine the incidence of dog bites, an investigation was carried out with a number of cattle and small ruminant breeders.

3- Evaluation of anti-rabies initiatives

Based on the results of the stakeholder survey, the data was statistically processed. The anti-epizootic measures identified were evaluated to assess their level of implementation. Recommendations based on the remediation of shortcomings were proposed, with the

aim of further strengthening disease control measures. These were directed towards the various stakeholder groups involved in the study.

Results

1. Consultation of animal health managers and analysis of archives

The interviews with the managers were used to provide data on rabies control measures in the Urban Commune of Dalaba. These managers described the various components of the rabies control measures being implemented in Dalaba. These control measures include:

- Anti-rabies vaccination;
- Raising public awareness of rabies;
- Reporting bites and clinical cases of animal rabies;
- Veterinary surveillance of biting animals;
- culling stray carnivores.

Table 1: Status of bite cases reported to animal health services from 2012 to 2017

Years	Number of reported bites	Number of animals placed under observation	Number of enraged animals	Number of patients referred	Number of victims vaccinated
2012	02	02	00	02	00
2013	02	02	00	02	00
2014	07	06	01	07	01
2015	02	00	00	02	02
2016	03	03	00	03	00
2017	09	06	01	09	01
Total	25	19	02	25	04

Source: Préfectoral Livestock Direction of Dalaba, 2012-2017

Table 2: Clinical cases of animal rabies in Dalaba from 2010 to 2017

Animal species	2010	2011	2012	2013	2014	2015	2016	2017	Total	Percent (%)
Dogs	01	01	06	03	02	04	00	01	18	56,25
Cats	00	00	00	00	00	00	01	00	01	3,13
Cattle	02	01	02	04	01	03	00	00	13	40,62
Sheep	00	00	00	00	00	00	00	00	00	00
Goats	00	00	00	00	00	00	00	00	00	00
Total									32	100

Source: Préfectoral Livestock Direction of Dalaba (2010-2017)

Table 3: Status of the anti-rabies vaccination campaign from 2010 to 2017

Years	2010	2011	2012	2013	2014	2015	2016	2017	Total
Dogs	15	09	14	03	19	19	09	12	100
Cats	03	00	00	00	00	00	00	00	03
Total	18	09	14	03	19	19	09	12	103

Source: Préfectoral Livestock Direction of Dalaba(2010-2017)

2. Investigation in the field

a- Consultation of the health services of the Urban Commune of Dalaba

The survey of health services in Dalaba produced the results shown in the table below.

Table 4: Results of survey of health services

Investigated subjects		Number of subjects surveyed	Results
Knowledge about rabies		07	100%
Symptoms	Fury		71,42%
	Salivation		42,85%
	Hydrophobia		71,42%
	Photophobia		14,28%
	Hyperesthesia		57,14%
	Paralysis		57,14%
Transmission process	Bites from rabid animals		100%
	Scratches		57,14%
	Licking of mucous membranes or wounds		28,57%
Prevention	Vaccination		100%
	Public campaigns		28,57%
Reception for bitten persons			28,57%
Treatment	Washing with soapy water		100%
	Antibiotic therapy		100%
	Tetanus serotherapy		100%
	Rabies serotherapy		-
	Rabies vaccination		50%
Availability of rabies vaccines			-
Availability of preventive vaccination			-
Directing victims	Conakry		100%
	Kindia		50%
Methods for controlling dog populations	Slaughter		71,42%
	Castration		100%
	Keeping dogs		(03) 42,85%

Table 5: Bites recorded in the health services of Dalaba from 2010 to 2017

Years	Number of people bitten	Number of people vaccinated	Number of clinical cases of rabies	Type of biting animals	
				Dogs	Cats
2010	25	03	00	24	01
2011	24	02	00	24	00
2012	47	09	00	47	00
2013	62	07	00	62	00
2014	87	06	00	84	03
2015	59	04	00	58	01
2016	58	05	00	58	00
2017	38	01	00	38	00
Total	**400**	**37**	00	395	05
Percent	_	**9.25%**	0.00%	98.7%	1.3%

Source : The Health Service of Dalaba, 2010-2017

b. Investigation among owners of domestic carnivores

The survey of dog and cat owners revealed the results set out in tables 6 and 7.

Table 6: Status of the survey of carnivore owners

N°	Investigated subjects		Number of subjects surveyed	Results	
				Yes	No
1	Living	Cages for dogs		14,28%	-
		Outdoor terrace		24,11%	-
		Courtyard		40,18%	-
		Nothing		21,43%	-

2	Strolling		112	77,68%	22,32%
3	Anti-rabies vaccination of animals			22,32%	77,68%
4	Castration			14,29%	85,71%
5	Biting carnivores			12,85%	87,50%
6	Alimentation			31,25%	68,75%
7	Understanding rabies			50,89%	49,11%
8	Transmission process	Bites		61,60%	-
		Scratches		16,96%	-
		Bites and scratches		21,42%	-
9	Prevention	Vaccination		41,96%	-
		No idea		58,03%	-
10	Putting dogs on a lead			12,50%	87,50%

Table 7: Results of the domestic carnivore inventory

Species	Vaccinated	Non- vaccinated	Castrated	Non-castrated	Total	Percent (%)
Dogs	45	73	30	88	118	56,19%
Cats	2	90	00	92	92	43,81%
Total	47	163	30	180	210	100%
Percent	**22,38%**	**77,62%**	**14,29 %**	**85,71%**	-	-
Average					**1,88±0,92**	

a- Investigation among livestock farmers

The survey of cattle and small ruminant farmers provided the data listed in table 8.

Table 8: Status of the survey of farmers

N°	Investigated subjects		Number of subjects surveyed	Answers to questions	
				Yes	No
1	Frequency of cattle bites		56	75,00%	25,00%
2	Alert from the veterinary community			35,71%	64,29%
3	Bite period	Dry season		44,64%	-
		Rainy season		21,43%	-
		At any time		33,92%	-
4	Understanding rabies			69,64%	30,35%
5	Transmission process	Bites caused by carnivores		66,85%	-
		Scratches		32,14%	-
6	Prevention	vaccination		-	100%
		Slaughter of stray animals		19,64%	80,35%

3- Evaluation of anti-epizootic measures (Table 9 and 10)

Table 9: Results of the evaluation of anti-epizootic measures

N°	Anti-epizootic measures identified	Level of performance	Degree of risk
1	Rabies vaccination of carnivores	22,38%	Positive
2	Elimination of stray dogs	19,64%	
3	Castration of carnivores	14,29%	
4	Confinement of animals	22,32%	
5	Keeping dogs on a lead	12,50%	
6	Feeding animals	31,25%	

Table 10: Assessment of initiatives by locality

Localities	Anti-epizootic measures					
	Vaccination	Slaughtering	Castration	Keeping on a lead	Claustration	Feeding
Population	47	11	30	14	25	35
Tangama	37,93%	09,09%	20,00%	42,86%	32,00%	25,71%
Hermakonon	17,24%	18,18%	28,00%	28,57%	24,00%	20,00%
Pellel Yéro	13,79%	9,09%	**32,00%**	21,43%	16,00%	20,00%
Silly	13,79%	9,09%	8,00%	7,14%	12,00%	17,14%
Diaguissa	6,90%	9,09%	4,00%	00%	8,00%	8,57%
Dalaba Missidè	3,45%	18,18%	4,00%	00%	4,00%	5,71%
Kollaguel	6,90%	**27,27%**	4,00%	00%	4,00%	2,86%

Discussion and Conclusion

The findings of the study showed that rabies control is a problem in the community of Dalaba. It is a high-risk area where the disease occurs sporadically.

The human health services have not reported any cases of human rabies. However, a number of people other than health workers recount having experienced cases of human rabies in the 90s. According to these managers, rabies is a neglected disease in the locality, and it was not until 1999 that a large-scale campaign to cull stray dogs was carried out, using poisoned bait. They report that the stray dog population has been considerably reduced. However, there was no second opportunity for a long time. Nevertheless, from 2000 to 2008, communities were made aware of the need to eliminate dogs by shooting. Now, alongside this operation, dog owners have always been educated about the importance of rabies vaccination. Overall, the fight against rabies appears to be neglected in the Urban Commune of Dalaba; although efforts are being made, people are not reporting bites to the veterinary services. The investigations also revealed that Rabisin®, the anti-rabies vaccine for dogs, is still available in private pharmacies.

Private veterinary practitioners obtain supplies from the pharmacy in the regional capital, with orders ranging from 5 to 10 vaccines. These quantities are sometimes used by the vets themselves or sold to the livestock farms. These vaccines are stored by the vets in a refrigerator, while the livestock station managers keep them in iceboxes with ice added.

With regard to the reporting of bite cases, we noted that from 2012 to 2017, 25 bite cases were reported to the animal health services, of which 19 bite cases were monitored by veterinarians. Following observation, 2 presented signs reminiscent of rabies. These results are in line with those found by Koné OM., 2010, who reported that out of 3,211 bite cases recorded from 2007 to 2009 in his research in Mali, 2,063 biting animals were observed, 109 of which showed signs of rabies [5]. According to the author, the lack of observation is justified by the slaughter or disappearance of certain biters.

In terms of susceptible species, the most affected species is the canine, with a rate of 56.25%, followed by the bovine species (40.62%) and the feline species (3.13%). These data differ from those of (Nodjimadji R., 2008), whose studies revealed 22 cases of animal rabies, 40.91% in dogs and 13.64% in cattle [6,7].

Among the owners of domestic carnivores, our observations showed that not many owners had cages for their animals (14.28%), compared with a majority who said they allowed their animals to roam free (77.68%). Regarding immunization, the data showed that it was insufficient. On the other hand, the majority of agents stated that they had some knowledge of rabies, as they were able to identify a number of signs of the disease, including: fury (71.42%), salivation (42.85%), hydrophobia (71.42%), photophobia (14.28%), hyperesthesia and paralysis (57.14%). They also identified that rabies can be transmitted by carnivore bites (100%), scratching (57.14%) and licking injured skin or mucous membranes (28.57%). Most bites occur during the dry season, due to the scarcity of grazing land (44.64%), followed by the rainy season (21.43%). Despite people's satisfactory level of knowledge about rabies and its control measures, the risk of exposure remains high, because not only are people bitten insufficiently vaccinated, but the level of reporting of bites to vets remains unsatisfactory. This suggests that there is a poor communication between human health and veterinary services during the rabies control campaign. At the end of this research, we noted that rabies constitutes a real threat and a major zoonosis requiring the adoption of strategies for better control.

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Conflict of Interest

No Conflict of Interest

Inform Consent and Ethical Statement

Not Required

Author Contribution

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