

## IMPACT OF DOG BITE IN KANO CITY A RETROSPECTIVE STUDY

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### ABSTRACT

**Background:** Rabies is an acute encephalomyelitis. It is zoonotic disease occurring in a variety of warm blooded animals including man.

**Objectives:** The study is to review the impact of dog bite and rabies in Kano City. A review of cases seen in Paediatric Unit of Aminu Kano Teaching Hospital, Kano over a ten year period. (January 1996 – December 2005).

**Results:** There were 44 cases of dog bites of which five (11.4%) cases developed rabies. The age range of children with dog bite was 4 to 9 years. The most common sites of bite were on the legs (45.5%), gluteal region (36.4%) while the least affected sites were the upper arm (6.8%) and the face (4.5%). There were 28 (63.7%) of the dogs were stray dogs while 12 (27.3%) were domestic dogs, only 31.8% of the domestic dogs were vaccinated. All those with rabies died; All the five patients presented with furious rabies.

**Conclusion:** Children with dog bites in which the current certificate of vaccination in the dog can not be produced, should be given antirabies vaccine. There should be public enlightenment talks aimed at informing the public of the need to report all cases of dog bite to health facilities.

**Key Word:** Paediatric, Dog bites, Rabies, Antirabies Vaccine.

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### INTRODUCTION

Rabies is a viral infection of the central nervous system usually transmitted by contamination of a wound with saliva from a rabid animal<sup>1</sup>. Rabies is one of the most horrible diseases in man with a high mortality<sup>2-6</sup>. Rabies is a widespread infection of warm blooded animal. In North America rabies occurs principally in skunks, foxes and bats<sup>1</sup>. In the United States cats are more likely to be rabid than dogs, however in Africa domestic dogs account for greater percentage of bites<sup>2</sup>. The head and face are the most common sites in studies in the developed countries<sup>7</sup>; whereas the lower limbs is the commonest site in studies carried out in Africa<sup>8,9</sup>. It was also found that more than 60% of patients were bitten by dogs<sup>9</sup>. The rabies vaccine is very efficacious in the prevention of this disease, if it is given at the appropriate time<sup>10-12</sup>. The human diploid vaccine (HDCV) is efficacious with no risk of adverse reactions; however it is expensive and not readily available.

The mortality of the disease is virtually 100% once symptoms have started<sup>9</sup>. Dog bite is of public health importance. Many families do not only keep dogs not only as pets, but for security reasons. This is the first study that reviewed, dog bite and rabies in

Kano, North-West Nigeria.

### MATERIAL AND METHODS

All children presenting with history of dog bite or clinical features suggestive of rabies in the Emergency Paediatric Unit (EPU) of Aminu Kano Teaching Hospital, Kano were reviewed retrospectively in this study over a 10 year period (January, 1996- December, 2005).

Diagnosis of rabies in this study, refer to an encephalomyelitis in a patient with exposure to bites from dogs, cats and other wild animals.

The case notes of each of patient were reviewed and the following information extracted; age, sex, history of bite, site of bite, presenting symptoms, history of vaccination in the dog, clinical findings on examination and treatment given. Those with wounds had their wounds cleaned with soap and water and they were left open thereafter. Tetanus toxoid was also given. Presentation of certificate of vaccination was taken as authentic proof of vaccination of the dog.

The patients with rabies were managed conservatively in quite environment. Adequate hydration and calories were provided by intravenous infusion. Phenobarbitone was given for seizure control while cardiopulmonary support was instituted.

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## RESULTS

Over the ten year period, 44 case of dog bites of which five cases (11.4%) developed rabies, accounting for 0.75% of total admission. Males were more affected than females. There were 38males (86.4%) and 6females (13.6%) giving a male to female ratio of 1:0.02. The age range of the children with dog bite was 4 to 9years.

Table 1 shows the age distribution of children with dog bite. Most of the 78% cases were seen between September and April during the dry periods. The most common sites of bite were on the legs (4.5%), buttocks (36.4%) and the thigh (27.3%) while the least affected site were the upper arm (6.8%) and the face (4.5%). Table 2

Five (11.4%) cases had the clinical form of furious rabies; aggressive behavior and hydrophobia, muscle spasms hyperexcitability. Only 1(20%) of the patients developed aerophobia. None of them presented with the dumb rabies.

Table 3 shows the types of dogs affected, there were 28 (63.7%) stray dogs while 12(27.3%) were domestic dogs. In the other 4 cases there was no documentation. Only 14(31.8%) domestic dogs were vaccinated and had certificate of vaccination. Majority of the bites were non-provoked. None of those who received antirabies vaccine post exposure developed rabies.

All of the 5(11.4%) cases that developed rabies were from rural areas and they never reported to a health facility before coming to AKTH, Kano. One of the patient had a bite on the hand and the dog did not free the hand of the child and the dog had to be killed (the head was cut off from the body). None of the patients with dog bite who received antirabies vaccine had rabies. All those with rabies died; mortality 100% with an average hospital stay of 6.5 days.

**Table 1: Age and Sex Distribution of the Children with Dog Bite.**

Age in Months	Number ( % )
< 36	2 (4.5)
36 – 47	1 (2.3)
48 – 59	16 (36.4)
60 – 71	6 (13.6)
72 – 83	9 (20.4)
84 – 95	2 (4.5)
96 – 107	3 (6.8)
108 – 119	3 (6.8)
120 and above	4 (9.0)
	<b>44 (100%)</b>

**Table 2: Sites of Dog Bite in the 44 Children.**

Sites <sup>xx</sup>	Number
Buttocks	16
Thigh	12
Legs	20
Hand	4
Upper arm	3
Face	2

<sup>xx</sup> There were cases of multiple dog bite.

**Table 3: The Characteristics of Dogs Responsible For the Bites.**

Types of Dogs	No. (%)		
Stray	28 (63.7)		
Domestic	12 (27.3)		
<b>Vaccination Status</b>	<b>Vaccinated</b>	<b>Not Vaccinated</b>	<b>Unknown</b>
Stray	-	24	4
Domestic	12	-	-
<b>Total</b>	<b>12 (30)</b>	<b>24 (60)</b>	<b>4 (10)</b>
<b>Provocation</b>	<b>No. (%)</b>		
Provoked	18 (40.9)		
Non-provoked	26 (59.1)		

## DISCUSSION

Dog bite remains a major public health problem as documented in this study and other previous studies<sup>2-5,8</sup>. Dogs are kept by many families as a pet and recently for security in the house. However, due to the economic down turn in the country, many of the families do not take care of these dogs, or even vaccinate them<sup>8</sup>. Dog bite was seen more in the males than females in this study, this is similar to other studies<sup>4-8,13-14</sup>. This may be due to adventurous nature of the males; hence they are exposed to dogs and are more likely to be bitten. The peak age range of children bitten by dogs was between 4 to 9years. This figure is nearly similar with other workers who reported a mean age of 48- 59months.Characteristics of dogs were noted to be similar to other studies,<sup>8,13,14</sup> stray dogs (63.7%) accounted for most of the bites. This is however in contrast with the reports from the developed countries where domestic dogs were responsible for the majority of the bites<sup>3,4,5,7</sup>. In the developed world, domestic dogs are kept in the house hence there is proximity of the dogs to humans. However, in Kano, which is a metropolitan town, most of the dogs stray around and they are therefore responsible for most of the bites.

In a study by Ojuawo and Abdulkareem<sup>8</sup> they found many of the offending dogs to be those that are used for hunting expedition. We did not find any dog used for hunting in our study, may be because most of the inhabitants are not really hunters. Moreover, land

reclamation for expansion and development by the state may have driven away game. The leg, buttocks and thigh were the common sites of bite in our study and this is similar to other studies in the African series<sup>8,9,13</sup>. This is however, in contrast to the developed world, where the common sites of bites are the face, head and neck<sup>5-7</sup>. This may be due to the fact that the children play with dogs that are domesticated and they are familiar with children, therefore the bites and licks are on the face. Stray dogs were responsible for most bites in our study and as such most of the stray dogs would be pursuing the child and therefore the best contact area is the lower limbs and gluteal region. This could provide the reason for the provoked attacks because children harass them.

None of the children in the study who received antirabies vaccine of those bitten by dogs that were fully immunized developed rabies, a finding that is similar to other reports<sup>8,13,14</sup>. Rabies vaccine has been shown to be very effective in the prevention of rabies<sup>10-12</sup>. None of the children given antirabies vaccine in this study reported any adverse effect or reaction.

All those who developed rabies in this study did not report to any other health facilities and there were no records of vaccination of the dogs. All children who developed rabies in this study died. Rabies remains a condition with virtually 100% mortality.

In conclusion, dog bite remains a public health problem. The offending dogs are usually stray dogs that are not immunized against rabies. Antirabies vaccines given to the patients remain effective preventive measures if there is no evidence of vaccination in the offending dog.<sup>5</sup> The public should be encouraged to report all cases of dog bite. The public health department of the Ministry of Health, should also control the number of stray dogs. This was done in the past, when public health department picked up any dog without a license plate on its neck. It is also important for the government to subsidize the cost of vaccines so that poor Nigerians could conveniently buy them when necessary. This will further increase antirabies immunization in animals and humans. This will further reduce the incidence of rabies death in the country.

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