Nigerian Veterinary Journal
VOL:32 (4) 366-370
ARTICLE

A Retrospective Study of Rabies Cases Reported at Vom Christian Hospital, Plateau State, Nigeria, 2006 – 2010.

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SUMMARY

Rabies is a zoonosis of public health importance in Nigeria. Exposure to bites of rabid dogs is the cause of over 99% of human cases of rabies worldwide. Post-Exposure Prophylaxis (PEP) is a vital aspect of clinical rabies prevention in humans. The aim of this study was to determine the magnitude of rabies disclosure among dog-bite victims (DBVs) and their compliance with a PEP regimen. We reviewed patient records of DBVs who were treated at the Vom Christian Hospital, Plateau State, from 2006 – 2010, obtained information on patient demographics and rabies status of implicated dogs from patients' hospital records. A trend of reported rabid dog bites in children was determined. We assessed compliance of DBVs with the recommended dosage regimen for PEP which is local wound treatment followed by vaccine therapy on days 0, 3, 7, 14 and 30. Over the five-year period, 713 DBVs were reported; 377(52.9%) were children <15 years, 404(56.7%) were males and 299 (41.9%) were bitten by laboratory-confirmed rabid dogs. Rabid dog-bites among children increased exponentially from 2007(6/1,000,000) to 2009(41/1,000,000) with a steep decline in 2010 (24/1,000,000). Of all DBVs, 677 (95%) first sought veterinary care. Of all implicated dogs, 305(42.8%) were tested and 299 (98.0%) were positive for rabies. Nearly all (99.6%) DBVs were treated using human diploid-cell rabies vaccine, while only 49.1% completed the recommended doses. Of the 299 DBVs bitten by rabies-positive dogs, 59.2% completed the regimen and were likely to be PEP compliant than those bitten by untested dogs (p<0.01). No mortalities among DBVs were reported to the hospital. Rabies in dogs is a serious public health problem in Plateau State, in which children constitute the highest proportion of rabid DBVs reported. We recommend joint sensitization of physicians and veterinarians about the need for detailed DBV and animal information for rabies management.

KEY WORDS: Rabies, Dog bite victims, Post Exposure Prophylaxis, Nigeria.

INTRODUCTION

Rabies, a re-emerging global health threat is an endemic neglected zoonosis (Nagarajan *et al.*, 2008) which is becoming a serious public health issue in Nigeria and in most developing countries of the world. Rabies is still endemic in the dog population in Nigeria although it can be vaccine-prevented (Nagarajan *et al.*, 2008). Dogs have been implicated as the major reservoir and vector of the disease (WHO 1992, Idachaba *et al.*, 2009). This disease is caused by a virus of the family Rhabdoviridae and genus *Lyssavirus*, nowcalled *lyssavirus* 1(RABV gen.1) (Idachaba *et al.*, 2009). The rabies virus affects all warm-blooded animals, including man, and is generally fatal

(Adeyemi and Zessin, 2000). It is becoming a serious health problem for people living in both rural and urban areas because of the risk of potential exposure to the disease through bites from rabid dogs and cats. Globally about 55,000 human deaths are recorded annually and over 98 percent of these mortalities are caused by canine rabies. Over 50% of these mortalities occur in children less than 15 years of age (Uzzaman, 2011). Africa accounts for approximately 24,200 deaths (WHO, 2004). The first human rabies case in Nigeria was reported in 1912 (WHO, 2004) and the annual report of the veterinary division of northern Nigeria reported dog rabies outbreaks as early as 1942 (Idachaba *et al.*, 2009). There are millions of feral/ free ranging or stray dogs with unknown vaccination history posing a serious threat to the human population (WHO, 2004). Among the various measures recommended for rabies control in dogs such as control of stray dogs and mass education, vaccination constitutes the most effective way to interrupt the rabies transmission cycle (Lombard *et al.,* 1988, Ezebuiro *et al.,* 1980). Cultural practices as well as consumption of dog meat in some parts of the country have hindered control of the disease in the dog population.

Post-Exposure Prophylaxis (PEP), a vital aspect of clinical rabies prevention in humans, consists of local treatment of bite wound followed by vaccine therapy and it should be initiated immediately after dog or cat bite (WHO, 2011). The objectives of thestudy was first, to determine the magnitude of rabies exposure among dog bite victims; secondly, to assess compliance of dog bite victims to PEP regimen and thirdly, to establish trends of dog bites among children.

METHODS

A review of DBVs' hospital records from 2006-2010 was carried out at the Vom Christian Hospital, Vom, Plateau State. Information on patient demographics, treatment and rabies status of implicated dogs from patients' hospital records was also obtained. The 5-year trend of reported rabid dog bites in children was determined. We assessed compliance of dog bite victims with the recommended dosage regimen for post exposure prophylaxis and reviewed hospital mortality records to ascertain deaths reported among the dog bite victims. Laboratory diagnosis of rabies was done using Seller's method at the Rabies laboratory of the National Veterinary Research Institute, Vom. We analyzed hospital data for dog bite victims using Epi-info version 3.3.2 software and compared PEP compliance of dog bite victims using chi-square test.

RESULTS

Over the five-year period, 713 dog bite victims were reported; 377(52.9%) were children less than15 years of age; 404 (56.7%) were males and 299 (41.9%) were bitten by laboratory-confirmed rabid dogs. Rabid dog-bites among all dog bite victims increased exponentially from 7/1,000,000 in 2007 to 34/1,000,0000 in 2009 with a steep decline of 19/1,000,000 in 2010 (Fig. 1). Among children, rabid dog-bites increased exponentially from 2007 (6/1,000,000) to 2009(41/1,000,000) with a steep decline in 2010 (24/1,000,000) probably due to increase in awareness of rabies in recent years (Fig. 2). Of all the dog bite victims, 677 (95%) first sought veterinary care. Of all implicated dogs, 305 (42.8%) were laboratory examined out of which 299 (98.0%) were positive for rabies; 376 (52.7%) were stray dogs of unknown status, 20 (2.8%) were vaccinated while 18 (2.5%)

were unvaccinated dogs (Table 1). Nearly all (99.6%) dog bite victims were treated using human diploid-cell rabies vaccine and 49.1% completed the recommended doses. Of 299 victims bitten by rabies-positive dogs, 59.2% completed the regimen and were likely to be PEP compliant than those bitten by untested dogs ($p<0.01$) probably as a result of increased awareness of the risk of dying from rabies if PEP regimen was not adhered to. There were no recorded mortalities among dog bite victims reported to the hospital.

DISCUSSION AND CONCLUSION

This five (5) year study review shows that of the 713 dog bite victims who reported as out-patients at the hospital, 299 were bitten by laboratory-confirmed rabid dogs, constituting 41.9% (n= 713) and this is consistent with previous report of dogs being the major reservoir and vector of the disease and goes to show that rabies is still endemic in the dog population in Nigeria (WHO 1992; Nagarajan *et al.,* 2008; Idachaba *et al.*, 2009). This retrospective review revealed that children less than 15 years of age were the most vulnerable consisting 52.9% (n= 377) of all dog bite victims as supported by Mazigo *et al.* (2010) in a similar review done in Tanzania. Children in this age group are more likely to sustain bites unknowingly due to closeness to dogs and lack of awareness of danger inherent there in. This study reported poor compliance of dog bite victims to post exposure prophylaxis despite availability of vaccines though expensive in agreement with findings of Mazigo *et al.* (2010). Of the dogs implicated for human bites, 52.7% (n=376) were stray dogs. This percentage of human dog bites caused by stray dogs is responsible for suggesting that control of stray dogs is vital to controlling rabies infection in both animal and human populations in developing countries (Ezebuiro *et al.,* 1980). However, this does not exempt dog owners from awareness about rabies and regular vaccination of their dogs against it. Of the owned dogs (n=337), only 5.9% had a history of vaccination while most of them (88.7%) where confirmed positive for rabies constituting a risk to the human population.

Rabies in dogs is a serious public health problem in Plateau State, in which children constitute the highest proportion of rabid dog bite victims reported. There was a low PEP completion rate among dog bite victims probably due to high cost of the rabies vaccine therapy. Lack of established follow-up protocols in patients is likely the result of under-reporting of deaths. We therefore, recommend a joint sensitization of physicians and veterinarians about the need for detailed dog bite victims and animal information for rabies management. We also recommend standardizing protocols for patient care and follow-up on dog bite victims. One way to prevent rabies in humans is to focus on controlling it in the animal reservoirs hence we recommend regular intervention targeted at controlling stray dogs by establishing and maintaining high vaccination coverage in the dog population through public enlightenment/awareness campaigns.

ACKNOWLEDGEMENT

The authors acknowledge the contributions of Management and staff of Vom Christian Hospital, Plateau State and the Nigeria Field Epidemiology and Laboratory Training Programme (NFELTP) Facilitators.

Tables and Figures

Table I: Status of dogs responsible for human bites

Status of Dog	Ownership	Number	%
Rabid dogs	Owned	299	41.9
Vaccinated	Owned	20	2.8
Unvaccinated	Owned	18	2.5
Stray dogs	Un-owned	376	52.7
Total		713	100

Figure 1: Trend of reported Dog bite Victims at Vom Christian Hospital, Plateau State, 2006 - 2010

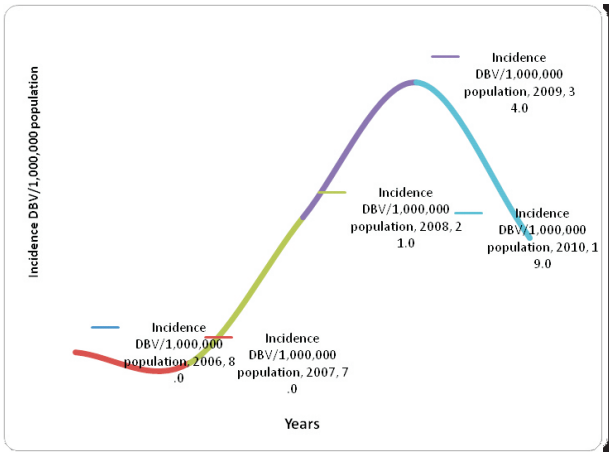
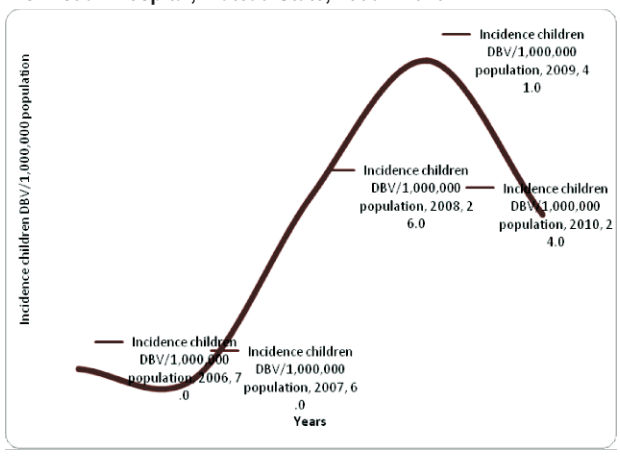


Figure 2: Trend of reported rabid Dog bite in Children at Vom Christian Hospital, Plateau State, 2006 – 2010



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