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A retrospective study of the prevalence of canine surgical cases in Delta State, Nigeria

^aUwagie-Ero, E.A., ^bOcheja, O.B. and ^cEkeolu, O.K

^aDepartment of Veterinary Surgery, Faculty of Veterinary Medicine, University of Benin, Benin City, Nigeria.

^bDepartment of Veterinary Physiology and Biochemistry, Faculty of Veterinary Medicine, University of Benin, Benin City, Nigeria.

^cDepartment of Veterinary Anatomy, Faculty of Veterinary Medicine, University of Benin, Benin City, Nigeria.

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ABSTRACT

Introduction: A retrospective analysis of clinical records of dogs presented to veterinary clinics in Delta State, Nigeria, was undertaken to analyse prevalence and pattern of surgical cases for a period of 10 years. The implications of the data to regional and national planning, awareness and preparedness of veterinarians in practice were discussed.

Methods: Case records held at five (5) government veterinary clinics in Delta State, Nigeria, between January 2006 and December 2016 were reviewed. Inclusion criteria for study were based on random sampling of veterinary clinics in busy urban centres across the state and dogs presented for surgical management.

Results: A total of 3,212 case files were reviewed. The records on sex, breed and type of surgical intervention were evaluated. Wounds/trauma cases were highest (29.6%) and tumours were least (1.7%) among surgical cases managed during the period. Among the four hundred and fifteen (n=415) dogs presented for surgical management, the local breed (Mongrel) had the highest prevalence (52.3%) of surgical conditions, while the Lhasa Apso (1%), and the Samoyed (1%) had the least occurrence. Male dogs (70.8%) were presented more for surgery than females (29.2%).

Significance: Data on animal population that assess veterinary medical facilities are vital tools for local, state, national, or global health strategic planning.

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Introduction

In veterinary practice, surgery is an active skill and equipment-based specialty that uses sutures, incisions, excision, or other invasive procedures, as well as, local, regional, or general anaesthesia for patient management (Debas *et al.*, 2006). For efficient and effective surgical management of the veterinary patients', special skills and training are required.

The availability of adequate and appropriate tools and personnel proficiencies for the surgical patient management could be used as an index of high profile clinical veterinary practice especially in poor resource settings as seen in many developing countries of Africa and Asia (Eyarefe and Dickson, 2014). Therefore, the need to provide information on the current burden of surgical cases among breed and sex of canine species is important. This information could be relevant when planning for clinical inputs (drugs and consumables) and equipment for the veterinary services department in the state and disease control in general as there is paucity of information on this in the region. More so, data on animal population that access veterinary medical facility are vital tools for local, state, national, or global health strategic planning (Hrispcsak and Albers, 2013;

King *et al.*, 2013). Information obtained from this survey could be useful in management of prevalent animal disease conditions (Hrispcsak and Albers 2013), patients' management, planning and follow-up (Eyarefe and Dickson, 2014, Blecker *et al.*, 2014, Uwagie-Ero *et al.*, 2018), research and training of animal health professionals for effective service delivery (Friedman *et al.*, 2010). Paucity of such data in sub-Saharan Africa had impeded evidence based clinical practice (King *et al.*, 2013; Jones *et al.*, 2013) and research in the region. This study therefore reports the prevalence of canine cases presented for surgical management and intervention in veterinary clinics in Delta State, Nigeria.

Materials and methods

Ethical clearance and consent for the study was obtained from the Veterinary Establishment Regulatory Committee of the Delta State Veterinary Services Department, Ministry of Agriculture and Natural Resources, Asaba before the commencement of the study. Case records held at five (5) government veterinary clinics in Delta State, Nigeria, between January 2006 and December 2016 were reviewed. Veterinary clinics in Delta State were randomly sampled to be included in the survey. Inclusion criteria in-

volve sampling of veterinary clinics in busy urban centres across the state. Only dogs presented for surgical intervention were included. This dog category was determined from the medical case history, clinical observations, diagnosis and treatment recorded in the reviewed case files. Data on type of surgical intervention and management, breed, sex and prognosis were extracted. The choice of data collected was based on previous retrospective studies (Eyarefe and Dickson, 2014; Minaret *et al.*, 2013; Bennour *et al.*, 2014, Uwagie-Ero *et al.*, 2018). Data collected were subjected to frequency distribution analysis using SPSS for windows version 16.0.

Results

During the period under survey, 3212 dogs were presented and treated at the clinics studied for varying conditions, out of which 12.9% (n=415) were presented for surgical intervention and management. Spaying of male dogs (castration) was highest (25.8%) followed by fracture fixation (21.44%). Otitis was least recorded (1.4%) followed by tumour cases (1.7%) (Table 1). More male dogs (70.8%) were presented for surgery than females (29.2%) (Table 2). The local breed of dogs (mongrel), had the highest prevalence (52.3%) for surgical interventions while the Lhasa Apso and the Samoyed had the least (1.0%) each during the period of study (Table 3).

Table 1. Prevalence of canine surgical cases in Delta State, Nigeria.

Surgical cases	*Prevalence (%)
Castration	107(25.8%)
Auricular hematoma	35(8.4%)
Tumours	7(1.7%)
Otitis	6(1.4%)
Traumatic injuries	123(29.6%)
Tail docking	31(7.5%)
Ear cropping	8(1.9%)
Fractures	89(21.44%)
Hysterectomy/caesarean section (CS)	9(2.2%)
Total	415(100%)

*Prevalence was calculated as number of animals presented for a case divided by the total number of animals presented for surgical intervention (n=415) multiplied by 100.

Table 2. Sex distribution of canine surgical cases in Delta State, Nigeria

Surgical cases	Male	Female	Total
Castration	107(25.8%)	-	107(25.8%)
Auricular hematoma	15(3.6%)	20(4.8%)	35(8.4%)
Tumours	4(1%)	3(0.7%)	7(1.7%)
Otitis media	3(0.7%)	3(0.7%)	6(1.4%)
Traumatic injuries	77(18.6%)	46(11.1)	123(29.6%)
Tail docking	19(4.6%)	12(2.9%)	31(7.5%)
Ear cropping	5(1.4%)	3(0.7%)	8(1.9%)
Fractures	64(15.4%)	25(6.0%)	89(21.44%)
Hysterectomy/CS	-	9(2.2%)	9(2.2%)
Total	294(70.8%)	121(29.2%)	415(100%)

CS – Caesarean section

Table 3. Breed distribution of canine surgical cases in Delta State, Nigeria

Breed	Castration	Auricular hematoma	Tumours	Otitis media	Traumatic injuries	Tail docking	Ear cropping	Fractures	CS	Total
Alsatian	3(0.7%)	21(5.1%)	3(0.7%)	6(1.4%)	33(8.0%)	1(0.2%)	2(0.5%)	27(6.5%)	3(0.7%)	99(23.4%)
Mongrel	104(25.0%)	14(3.4%)	4(1.0%)	0(0.0%)	53(12.8%)	2(0.5%)	0(0.0%)	39(9.4%)	1(0.2%)	217(52.3%)
Rottweiler	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	19(4.6%)	28(6.7%)	2(0.0%)	12(2.9%)	2(0.5%)	63(13.5%)
Caucasian	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	8(1.9%)	0(0.0%)	4(1.0%)	10(2.4%)	0(0.0%)	22(4.3%)
Samoyed	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	5(1.2%)	0(0.0%)	0(0.0%)	1(0.2%)	1(0.2%)	7(1.7%)
Lhasa Apso	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	5(1.2%)	0(0.0%)	0(0.0%)	0(0.0%)	2(0.5%)	7(1.7%)
Total	107(25.8%)	35(8.4%)	7(1.7%)	6(0.2%)	123(29.6%)	31(7.5%)	8(1.9%)	89(3.7%)	9(2.2%)	415(100%)

CS – Caesarean section/Hysterectomy

Discussion

This ten-year retrospective study highlighted a higher incidence of surgical intervention in male (71.9%) than in female dogs (28.1%) among the studied population which may probably be due to the aggressive nature, quest for dominance and wandering habits of the male dogs in search of a mate which predisposes them to traumatic events such as car accidents and fractures (Uwagie-Ero *et al.*, 2018). Although studies on dog owners' preference for gender has not been investigated in this environment, the purpose of dog ownership seems more geared toward provision of security, hunting and breeding purposes rather than companionship as seen in countries of Europe and America (Fielding and Plumridge, 2004). The male dog is kept mainly for security and hunting purposes and are therefore predisposed to injuries and traumatic events, while the females are kept for breeding purpose and also providing companionship for males. Male dogs that are not preferred for breeding are most often castrated. This may account for the high proportion (25.8%) of castration cases, a reason why more male dogs were presented for surgeries than females (Kubinyi *et al.*, 2009). More so, the indigenous practice of allowing dogs to stray in the area of study also contributes to the exposure of dogs to traumatic events leading to high proportion of surgical intervention recorded in the local indigenous breed. Traumatic injuries requiring surgical interventions such as skin lacerations had a prevalence of 29.6%, with majority of the cases recorded in the local breed. This is due to the fact that local breed is commonly used amongst the local

hunters for hunting purposes. This activity exposes them to injuries that require surgical intervention and management.

This retrospective study of clinical case records serves as a valuable tool in estimation of veterinary facility's disease burden (Werehn *et al.*, 2007), communication among veterinary clinicians and surgeons on patients' conditions (Noteboom and Qureshi, 2014) and planning on veterinary clinical facilities management and personnel development (Friedman *et al.*, 2010). This is important in evidenced based intervention, local, state, regional and national planning for global disease control and preparedness of veterinarians. It is also a tool for estimation of regional disease burden and it serves to provide awareness amongst dog owners on the expected disease outcomes and possible prognostic intervention. The result of this study highlights the need to plan for further facility expansion to cater for the surgical needs of the canine species. The proven skills of the surgeons/clinicians and available facilities for patients' management also serves to strengthen dogs owners' confidence in presenting their dogs for surgery.

Castration, which is next in ranking amongst the most prevalent surgical cases (25.8%), has also been reported in literature among the most frequently performed procedure in veterinary practice (Neilson *et al.*, 2001; Eyarefe *et al.*, 2011). Apart from dogs kept for breeding purposes, most dog owners prefer their dogs castrated to reduce dog roaming habits in search for mating opportunities. This study showed that tail docking and ear cropping which are elective or cosmetic surgeries were also amongst the cases presented. Dog owners request for tail amputation to

improve the cosmetic appearance of their dogs. Even though tail docking may be indicated in cases of severe traumatic injuries and neoplasm, however such cases are few (Bennett and Perini, 2003).

A major limitation of the study we observed was the issue with record keeping and methods of case filing. This was a serious challenge as the methods of case filing varied widely across the different clinics. We realized that while some clinics had case files and case numbers assigned to the individual pet which was maintained through the visitations of the pet to the clinic, some did not have this uniformity – cases where registered in note books and not followed serially, it became a challenge to filter the cases appropriately and avoid duplication of data. The lack of well-organized case filing system and records of follow-up immensely affected the uniformity of data for such clinics. However, a couple of them were excluded and for same reason the initial sample size for the clinics across the state was 13 but because of the lack of data the number was reduced to five clinics after the initial pilot study to check for availability of data. We are working on reporting this major limitation in a study on veterinary clinical data and case file management in veterinary clinics across the state. In some cases, the case files were incomplete, for instance the breeds were not identified, the ages and sex of some were not recorded, follow up done but not properly reported in case files. Some surgical interventions were not specified, but all of this was considered in the final collection of data and analysis to be able to present this report.

Conclusion

The results of this study give a vivid profile of surgical disease burden and procedures commonly encountered in veterinary clinics in Delta State, in southern Nigeria. These results could be extrapolated for local, state, regional and national planning for veterinary service delivery across the country. The results also suggest the nature of surgical emergencies that are predominant in the region and suggests the surgical equipment that veterinarians in the region would ordinarily require in their daily practice. Global strategic planning on veterinary health care delivery across the country would consider this evidenced based results in planning and expansion of veterinary facilities.

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Conflicts of Interest

The authors declare no conflicts of interest.

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