Research Article: Theriogenology

A Retrospective Study of Reproductive Conditions in Bitches in Nairobi

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Abstract
A twenty year retrospective study was carried out in the Small Animal Clinic, University of Nairobi, Kenya and in a private Small Animal Clinic in Nairobi between the years 1988 to 2008. A total of 6548 bitches had been presented with reproductive problems. The cases were categorically grouped according to the type of infertility diagnosed. Non-infectious infertilities were sixty nine percent and infectious types were thirty one percent. Only two percent of the latter were confirmed in one clinic. 23.20 % of non-infectious infertility were managerial, 29.1% anatomical and 7.80% physiological types while 39.80 % were unclassified miscellaneous cases. The cases classified under infectious infertility consisted of; vaginitis/endometritis/metritis (36.3%), pyometra (25.3%), abortions (21.5%), vaginal discharges (11.7%) and miscarriages (5.1%). The incidence of infertilities was highly common in breeds of German shepherd (39%), Doberman (6%), Rottweiler (12%) and their crosses (43%). The percentage of the reproductive cases presented in both clinics had no statistical difference at (p<0.05). It was evident from the results of this study that infectious infertility exists among the bitches in Kenya and it would be beneficial to do further studies to establish the causative agents to avert any possible outbreaks of zoonotic diseases.

Key words: Reproductive conditions, Bitches, Nairobi

Introduction
Fertility in females involves the desire and ability to mate, the capacity to conceive, nourish the embryo and finally the power to expel a normal neonate and its fetal membranes (Mutembei, 1998; Davidson, 2006). Disturbance of the reproductive cycle of the bitch results in either sterility or infertility (Gavrilovic et al., 2008). Sterility is absolute inability to reproduce while infertility is diminished ability to reproduce which leads to delay or failure to produce the expected neonate(s) per the expected time (Mutembei, 1998). Infertility is broadly classified as non-infectious and infectious infertility. Non-infectious infertility can further be subdivided into functional and anatomical infertility (Christiansen, 1990). Anatomical infertility results from a deviation from normal anatomy of the genitalia usually resulting from both developmental and acquired anomalies. Functional infertility is due to a deviation from the normal physiology or hormonal regulation of the estrus cycle and pregnancy (Okkens and Kooistra, 1997). Infectious infertility results from the invasion of the body or genitalia by microorganisms like bacteria, fungi, viruses and protozoa which then disrupt the normal functioning of the genitalia (Givens and Marley, 2008). Infertilities can also occur due to poor management practices, notably poor mating decisions (Gitonga et al., 2007). The aim of this study was to provide a baseline data on the reproductive conditions of bitches in Nairobi as was observed in two clinics.

Materials and Methods
A 20 year retrospective study was conducted in two Small Animal Clinics in Nairobi from the year 1998 to 2008. The criterion for selecting the two clinics was based on good record keeping, professional management, ease of accessibility and duration of existence. Using daily records, all reproductive cases were retrieved, recorded and thereafter specific individual records scrutinized to ascertain the actual diagnosis and diagnostic techniques employed. All data was entered into retrieval forms and computer programs. The infertility cases were further categorized according to the type of cause. All data were entered and stored in Microsoft office Excel 2007 (Microsoft Corporation, 2007) and percentages generated using SAS (Statistical Analytical System) © 2002 – 2003 (SAS Institute Inc., Cary, NC, USA). Student paired t-test was used to check for statistical difference of the cases presented in the clinics.

Results
A total of 6548 bitches were presented to the two clinics with reproductive problems. Of these, 208 (31%) were tentatively diagnosed to have infectious infertility (Table 1) and 2% of them were confirmed (causative agent established) from one clinic. The confirmed cases were pyometra caused by Escherichia coli, Staphylococcus aureus and Streptococcus spp. These were confirmed by pus aspirates that were collected aseptically using a sterile needle and syringe and thereafter bacteriology done. Bacteriology involved streaking the samples on 10% blood agar plates incubated at 37°C for 24 hours and isolated colonies identified by gram staining and sub-cultured in appropriate media for biochemical reactions (Merchant and Packer, 1983). The other 4530 (69%) cases were tentatively diagnosed as non-infectious infertilities (Table 2).
The diagnosis protocol used was usually based on history alone, especially for cases of abortion, miscarriage and stillbirths. History and physical examination was used to diagnose cases of vulva hypoplasia, mammary gland tumors, uterine prolapse, vaginal prolapse, pseudo-pregnancy, vaginitis, endometritis, metritis and pyometra. Ultrasonography and radiology were used to ascertain pyometra and pregnancy. Radiology was used to check for metastasis in some cases of mammary gland tumors. Bacteriology was used in only 2% of the cases, especially for pyometra. Vaginal cytology was used consistently in managerial infertilities. Incidental diagnosis of uterine and ovarian cysts was established during autopsy. The prevalence of infertilities was high among the following breeds: German shepherds (39%), Dobermans (6%), Rottweilers (12%) and their crosses (43%). The percentages of the reproductive cases presented in both clinics had no statistical difference at (p ≤ 0.05).

Discussion
The findings of this study indicate that a high percentage of the reproductive cases in the study area were caused by infectious agents, anatomical infertilities and managerial factors. In this scenario, cases of infectious infertilities were higher compared to managerial types. These findings are contrary to previous study (Gitonga et al., 2007) that reported a 57% situational incidence of infertility due to mistimed breeding. However, this might be a new trend in kennels within Nairobi and its environs, a situation that warrants a new perspective study. The diagnostic methods employed in the studied clinics for infectious infertilities were non confirmatory a challenge in the investigation of infertilities probably due to the high costs involved (Gitonga et al., 2007). Simple laboratory tests such as bacteriology and serology could be beneficial so as to identify the pathogen(s) implicated (Givens and Marley, 2008) and are recommended for future examinations of such cases. The reason for ignorance of such tests can not be explained, but this seems to be the trend in the two clinics. Studies have shown that the cost and time involved are the main limiting factors in the investigation of infertilities (Givens et al., 2007). Infectious diseases of the canine reproductive tract could include: 1. Bacterial infections; such as brucellosis (Wanke, 2004) due to Brucella canis, Brucella abortus and Brucella suis, infection due to Salmonella species, Streptococci and E.coli (Givens and Marley, 2008; Pretzer, 2008). 2. Viral diseases such as: Herpes virus, Distemper virus and parvovirus 1 and 2 (Ortega et al., 2007). 3. Parasitic/protozoan infectious caused by: Toxoplasma gondii, leishmania species and Neospora caninum (Pretzer, 2008). The incidences of these infectious diseases vary depending on the country and regions within a country (Romagnoli, 2003). It would be prudent to confirm infectious infertilities occurring in various countries so as to establish their prevalences within countries. Findings of this study indicate this to be a major weakness in the two Small Animal Clinics in Nairobi.

Cases due to managerial causes of infertility had lower incidence during the study period, probably because breeders are lightened on how to check for signs of heat in bitches as was reported previously (Mutembei, 1998). However, Gitonga et al., (2007) reported otherwise. Managerial causes of infertility and hormonal imbalances require proper history taking to establish whether the bitch has normal cycles, and if so, to check whether breeding was done at the appropriate time and also to rule out any cases of reproductive diseases. On the other hand, utilization of vaginal cytological analysis during estrus phase could easily provide the clinician with the optimal eosinophilic index required for breeding (Gitonga et al., 2007). Breeders should be encouraged to take their bitches to clinicians as soon as the first signs of proestrus are displayed (vulvar discharge, male attractiveness) for follow up's every 2-3 days to monitor how quickly the female is progressing towards ovulation (Romagnoli, 2003; Wanke et al., 2006). Simple vaginal smears could be taken and / or serum-progesterone assays done.

This study recommends utilization of vaginal smear analysis for cases of poor breeding management. Breeding should be performed as soon as the bitch stands and / or as soon as her smear shows eosinophilic index of over 80%; superficial cells that are fully cornified, in order not to miss early ovulators. Ovulation could also be timed using serum progesterone assay every 2-3 days since beginning of proestrus and the bitch should be bred when progesterone value progressively picks beyond the basal levels (>5.0 ng/ml) (Romagnoli, 2003). Successful approaches to infertility cases in bitches should also involve examination of the stud dog to rule out any anomalies caused by the male dog but blamed on the bitch (Mutembei, 1998).

The use of proper history taking, adequate physical examination and relevant diagnostic tests are key in establishing proper diagnosis in any fertility case. Further studies would be beneficial to establish the causative agents of infectious infertility of bitches in Kenya. Use of vaginal cytology together with hormonal assay to establish the actual ovulation time should be encouraged for proper breeding management.

Acknowledgments
We would like to express our gratitude to Dr. Muchemi, Department of Public Health, University of Nairobi for his guidance in data analysis. Our appreciation also goes to Maria Mukiri of Small Animal Clinic, University of Nairobi for assisting in record retrieval and sorting.
References


