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Research Article

THE PREVALENCE OF URINARY TRACT INFECTIONS (UTIS) IN DOGS RESIDING IN GUWAHATI, ASSAM

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ABSTRACT

A study at veterinary clinical complex, College of Veterinary Sciences, Guwahati, Assam, India was conducted to examine 240 dogs for urinary tract infections (UTIs) over six months. The study found that 7.5% had UTIs, with the highest prevalence in dogs aged 1-3 years and in female dogs. Pugs had the highest prevalence of UTIs among breeds. The study aimed to determine prevalence of UTIs in dogs.

Keywords: Female, Prevalence, Pugs, UTIs

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Dogs have always been deemed the ultimate faithful companions to humans, rightfully earning the honorable title of "man's best friend" throughout history. Dogs are vulnerable to various infectious and non-infectious diseases like any other animal. Many contagious diseases are possible to prevent by vaccination and timely treatment. The urinary tract infection is one of the most common disease in small animal practice and the most common reason for antimicrobial therapy prescription (Kogika *et al.*, 1995). The urinary system releases metabolic waste products from the body, regulates electrolytes, water, and other solute balance, and regulates the body's acid-base balance. It manages plasma potassium, calcium and phosphate ion levels, secretes hormones such as erythropoietin and renin, and helps in vitamin D3 metabolism (Sarkar, 2013). Any urinary system disorder can cause metabolic disturbances and acid-base imbalance (Dehmiwal *et al.*, 2015). According to Bartges (2004), the leading cause of UTIs is bacteria, although fungi and viruses can also infect the urinary tract. Bacterial infections in the urogenital system are common and can range from asymptomatic to life-threatening, as reported by Barsanti in 2006. The only exception is the distal urethra, which has a healthy bacterial flora. Bacteriuria is more common in females, older animals, and those with concurrent diseases or urinary devices such as catheters, stents, or subcutaneous ureteral bypass devices (Bubenik *et al.*, 2007).

The present study aims to investigate the prevalence of Urinary Tract Infection in dogs and the use of effective antimicrobials in the northeastern region of India.

MATERIALS AND METHODS

A total of 240 dogs with symptoms of urological disorder irrespective of age, sex and breed were considered for the present study of urinary tract infection at the Veterinary Clinical Complex (VCC), College of Veterinary Science, AAU, Khanapara, during the period from November 2020 to April 2021. Dogs with clinical signs suggestive of urinary tract infection, such as hematuria, polyuria, polydipsia, pollakiuria, dysuria, foul-smelling urine, pyuria, stranguria, anuria, urinary incontinence and oliguria, were screened after recording the age, breed, and sex of these animals. The suspected animals were subjected to clinical examination that included recording rectal temperature, pulse rate, and respiration rate. After the screening of suspected dogs to be affected with UTI, these cases were subjected to the routine examination of urine (urine R.E.), isolation and identification of the causative organism, in-vitro antibiotic sensitivity, haemato-biochemical analysis and ultrasonography (USG) of the abdomen for confirmation of UTI. The statistical analysis of the data was carried out according to the standard statistical procedure using SPSS version 20.0 using two-way ANOVA.

RESULTS AND DISCUSSION

1. Overall Prevalence

Out of 240 dogs, a total of 18 dogs were found to be positive for UTI. The overall prevalence of UTI in dogs in the present study was found to be 7.5% and presented in Table 1 and Fig. 1. It has been estimated that 10% of all canine patients attended by veterinarians for any reason have UTIs in addition to problems with which they are presented (Yogeshpriya *et al.*, 2016). The presence of such cases was observed in this study also. During the present investigation, the overall prevalence rate was found to be 7.5%. This was similar to the finding of the prevalence of UTI by Chawla (2020), recorded at 9.1% and Norris *et al.* (2000), which ranged from 4.5-14%. The present finding was lower than those of Hariharan *et al.* (2016) and Somu *et al.* (2015) which was ranging from (45.03-78.55%) and higher than Yogeshpriya *et al.* (2018) with 1.1%. The

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variation in the present finding might be due to the total number of samples collected and the geographical location of the study. The prevalence may be related to factors like food with more carbohydrates, lower immunity level, dermatitis, bowel GI excreta, hygiene, stress, systemic diseases, hypothyroidism, diabetes, cystitis, bladder stones, and prolonged corticosteroid therapy, etc. as mentioned by Wong *et al.* (2015) and Qekwana *et al.* (2018).

Table 1. Prevalence of UTI in dogs

No. of cases examined	No. of positive cases	Prevalence (%)
240	18	7.5

Table 2. Age wise distribution of UTI in dogs

Age (years)	Total no. of cases examined	No. of positive cases	Prevalence (%)	Chi- square value
<1	40	2	5.0	
1-3	55	6	10.90	
3-6	45	4	8.88	2.178^{NS}
6-9	52	4	7.69	
>9	48	2	4.16	
Overall	240	18	7.5	

NS- non-significant

Table 3. Sex wise distribution of UTI in dogs

Sex	No. of cases examined	No. of Positive cases	Prevalence (%)	Chi square value
Male	143	7	4.89	3.461^{NS}
Female	97	11	11.34	
Overall	240	18	7.5	

Table 4. Breed wise distribution of dogs suffering from UTI

Breeds	Total no. of cases examined	No. of positive cases	Prevalence (%)	Chi-square value
Labrador Retriever	42	4	9.52	1.501^{NS}
Golden Retriever	46	4	8.69	
Pug	18	2	11.11	
Non-descript	28	2	7.14	
German Spitz	34	2	5.88	
Great Dane	12	1	8.33	
Lhasa Apso	15	1	6.66	
Saint Bernard	27	1	3.70	
Crossbreed	18	1	5.55	
Overall	240	18	7.5	

2. Age-Wise Prevalence of UTI

The age-wise prevalence of UTI was found to be the highest (10.90%) in the age group 1 to 3 years, followed by 3 to 6 years (8.88%), 6 to 9 years (7.69%), 0 to 1 year (5%) and lowest being in the age group of above nine years (4.16%) presented in Table 2 and Fig. 2. However, chi-square value showed there was no significant association between age group and occurrences of UTI in dogs. UTI infection was found in all ages of dogs but was frequently higher in middle-aged dogs (Kogika *et al.*, 1995). Even pups may also be susceptible to UTI; however, Ling *et al.* (2001) mentioned that the mean age at diagnosis, regardless of sex, is approximately 7-8 years and Passmore *et al.* (2007) reported the prevalence of UTI to be more in older dogs with a median age of 9 with UTI compared to > 3 years old. In the present study, the animals of different age groups were included, such as < 1years, 1-3year, 3-6 year, 6-9 year and > 9 years. The prevalence was ranging from 4.16-10.9%. The highest prevalence was found in 1-3 years of age (10.90%) followed by 3-6 years (8. 88%), 6-9 years (7.63%), 0-1 years (5 %) and lowest in > 9 years (4.16%). A similar finding was reported by Punia (2018) in >4 years of age, Yogeshpriya *et al.* (2012) in 3-5 years of age, and Cetin *et al.* (2003) in > 2 years of age. On the contrary, Thompson *et al.* (2011) recorded a higher prevalence in 7-8 years of age. Bubenik *et al.* (2007) explained that advancing age and stress may adversely affect the immune system and cause a barrier in the clearance of bacteria entering the urinary system. In the present study, the finding might be due to increased breeding in this age group, which increases the chances of UTI. Lowest in > 9 years of age due to the number of cases included in this study.

3. Sex-Wise Prevalence of UTI in Dogs

The prevalence of sex-wise variation of UTI in dogs was found to be higher in females (11.34%) than males (4.89%), presented in Table 3 and Fig. 3. However, the chi-square value showed that females were higher in occurrences of UTI in dogs. In the present study, the prevalence in female dogs was higher than in male dogs, with 11.34% and 4.89%, respectively. The present finding was in agreement with Norris *et al.* (2000), Saharan *et al.* (2022) and Wooley and Blue (1976). This might be due to differences in the length of the urethra and the effect of hormones contributes to more occurrences in female dogs (Senguin, 2003). The shorter length of the urethra provides fewer barriers to colonization by fecal bacteria. Dunning and Stonehewer (2002) also concluded that the absence of prostate secretion rather than urethral length may also be likely to predispose female dogs. The lack of prostatic secretion that contains prostate acidic factors has antibacterial effects. Besides this, the females have also increased vaginal discharge during the cycle time, which increases the chances of infection ascending the urinary tract.

4. Breed-Wise Prevalence of UTI

The breed-wise prevalence of UTI is presented in Table 4 & Fig. 4. Breed-wise prevalence of UTI in dogs was found to be highest in Pug (11.11%), followed by Labrador retriever (9.52 %), Golden retriever (8.69 %), Great Dane (8.33%), non-descript (7.14%), Lhasa Apso (6.66%), German spitz (5.88%), Crossbreed (5.55%) and Saint Bernard (3.70 %), respectively. In the result, the chi-square value showed no significant association between breeds and occurrences of UTI in dogs. Variations in the prevalence of UTI in different breeds are reported by many workers (Weaver & Pillinger, 1977 and Punia, 2018). In the present study, the breeds included were Labrador Retriever, Pug, Great Dane, Golden Retriever, Non-Descript, Lhasa Apso, German Spitz, Cross Breed, and Saint Bernard. The prevalence was ranging from 3.7-11.11%. The highest prevalence was observed in Pug (11.11%), followed by Labrador Retriever (9.52%) and lowest in Saint Bernard (3.70%). This was similar to the findings of Weaver and Pillinger (1977), Punia (2018) and Chawla (2020). Higher prevalence was reported by Yogeshpriya *et al.* (2018), Antony (2004) and Norris *et al.* (2000) in German Shepherd dogs. The present finding might be due to changes in the likeness of breeds over time (Norris *et al.*, 2000). Besides this, pugs with folded skin may enable them to collect more moisture and bacteria that may thrive and enter the urinary tract. Also, pugs are more prone to kidney and bladder stones than some breeds.

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