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Research Article

Efficacy of different techniques for diagnosis of pyometra in female dogs

NISHI PANDE[1], S. PRABHAKAR[2], V.K. GANDOTRA[3], M. HONPARKHE[4] AND A.S. NANDA[5]

Department of Animal Reproduction, Gynaecology and Obstetrics,
Punjab Agricultural University, Ludhiana-141 004

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ABSTRACT

Pyometra in female dogs is a polysystemic diestrual disorder which if not treated can induce high mortality. A definite diagnosis of pyometra in bitches becomes a challenge on certain occasions. A comparative study of different techniques for the diagnosis of pyometra was, therefore, made in twenty bitches with clinical symptoms of pyometra. Uterine enlargement (>1.0 cm diameter) through abdominal palpation was found to be confirmatory in 75 per cent of the pyometritic bitches. Only 9 out of 20 bitches had neutrophilia (>77 %) characteristic of pyometra. Plain radiography could detect uterine enlargement in 9 out of 19 pyometra-affected bitches. Ultrasonography was found to be conclusive for diagnosis of pyometra in 16 out of 18 bitches. The results thus, suggested abdominal palpation and ultrasonography along with clinical history as effective techniques for the diagnosis of pyometra.

Key words: Canine, pyometra, ultrasound, radiography

The diagnosis and therapy in bitches is hampered by the difficulty in access to the uterus per vagina. A definitive diagnosis for pyometra becomes difficult when the oestrus and breeding history is vague. Pyometra may be confused with pregnancy, renal failure, cystitis, vaginal neoplasia and polyarthritis (Christiansen, 1984). The comparative efficacy of different diagnostic aids for pyometra viz. abdominal palpation, haematology, radiography and ultrasonography was studied in the present study.

MATERIALS AND METHODS

Twenty bitches aged 10 months to 12 years with the history of vaginal discharge presented at the Small Animal Clinic, PAU, Ludhiana were the subject of the study. The tentative diagnosis of pyometra was based on the history and clinical symptoms. Per vaginal examination was done to rule out vaginal tumours. The bitches supposed to have pyometra were subjected to the following examinations:

Present address: [1]Veterinary Officer, Balaghat M.P.,[2&3]Professor, [4]Assistant Gynaecologist, [5]Professor & Head

Abdominal Palpation

Bitches were palpated per abdomen for assessing the size of uterus that was then recorded to be normal (≤ 1.0 cm), enlarged (> 1.0 cm) or unclear.

Haematology

Total Leucocytic (TLC) and differential Leucocytic counts (DLC) were studied as per routine clinical procedures (Jain, 1986).

Radiography

The bitches were fasted overnight and were administered 1-2 Tabs. Gasex and Dulcolax. Plain radiographs were taken in the lateral recumbent position the next morning. Fluid or soft tissue densities, distension beyond normal limits were investigated. Radiographs were interpreted as conclusive or inconclusive for pyometra. Uterine distension was recorded as uniform or loculated.

Ultrasonography

Concept-2, grayscale, B-mode, real time scanner

with 7.5 MHz linear assay transducer was used for the study. Ultrasonography was conducted after radiography in the prepared animal. A coupling medium (K-Y Jelly) was applied on the site to displace air and the uterus was scanned below the urinary bladder in the prepubic region. Sonography was conducted with partially filled urinary bladder to facilitate imaging of the uterus.

RESULTS AND DISCUSSION

The success rate of different diagnostic tests has been presented in the Table 1.

Abdominal Palpation

It revealed an enlarged uterus (approx. >1.0 cm diameter) in 15 animals. The uterine horns were unclear in 4 bitches, either due to obesity or due to tense abdomen as also reported by Feldman and Nelson (1987). Appreciation of uterine enlargement on abdominal palpation in 75 per cent cases with pyometra in the present study shows it to be a good technique to diagnose pyometra.

Haematology

The leucocytosis was moderate (17,000-30,000 cells/mm^3) in one, marked (30,000-50,000 cells/mm^3) in four and extreme (>50,000 cells/mm^3) in two bitches while neutrophilic count was moderate (77-80%) in two, marked (80-89%) in five and extreme (>90%) in two bitches.

Table 1: Success rates of different diagnostic techniques for pyometra in bitches

Technique	Result	No of Animals	Success Rate (%)
Abdominal Palpation	Normal (≤ 1.0 cm)	1	
	Enlarged (> 1.0 cm)	15	75
	Unclear	4	
Haematology	TLC (≤17,000/mm^3)	13	35
	TLC (>17,000/mm^3)	7	
	Neutrophil (≤77%)	11	45
	Neutrophil (>77%)	9	
Radiography	Inconclusive	10	
	Conclusive	9	47.36
	Not Done	1	
Ultrasonography	Inconclusive	2	
	Conclusive	16	88.88
	Not Done	2	

In dogs, the normal range of TLC is 6,000 to 17,000 cells/mm^3 while that of neutrophils is 60-77 per cent. A mild leucocytosis (up to 20,000 cells/mm^3) is seen during pregnancy in bitches (Jain, 1986). Any condition involving infection and/or inflammatory change produces marked neutrophilia with a shift to the left (Jones and Joshua 1982). Occasional neutropenia is encountered in cases of pyometra (Jain 1986; Jones and Joshua 1982). In the present study, 65 per cent animals had white blood cell (WBC) counts within normal range. This is consistent with the findings of Feldman and Nelson (1987) who reported 52 per cent normal WBC counts prior to initiation of any therapy. Thus, leucocytosis and /or neutrophilia do not appear diagnostic for pyometra because of possibility of both false positive and false negative diagnosis.

Radiography

Lateral abdominal radiographs were conclusive for pyometra in only 9 cases. Radiographically the uterus was seen as fluid dense tubular structure in the ventral and caudal abdomen. Marked uterine enlargement resulting into displacement of intestinal loops was seen in 3 bitches while loculated appearance of the uterus was observed in one bitch that could be appreciated on abdominal palpation also.

Renton *et al.* (1971) and Ayyappan *et al.* (1997) reported 100% visualization of the uterus in pyometra while Nelson *et al.* (1982) reported radiography to be conclusive in 73% cases. The lesser radiographic uterine visualization (47.36 %) in this study may be due to different radiographic technique.

Ultrasonography

Ultrasonographic examination of the 18 bitches in the present study revealed the uterine horns to be 1.1 to 3.4 cm in diameter. Uterine diameter of 1.0 to 1.1 cm along with a small amount of fluid is normal during dioestrus (Yeager and Concannon, 1995). Ultrasound pictures were found to be inconclusive for pyometra in one case while in another, the uterus could not be imaged due to proliferated mammary tissue in false pregnancy. Ultrasonography was found conclusive in 88.88 percent animals affected with pyometra in this study.

Ultrasonographic characteristics of pyometra varied depending upon the extent of involvement and nature of contents. Extensive involvement depicted round hypo echoic to anechoic areas placed side by side covering the complete abdomen while moderate involvement exhibited hypo echoic, roughly round structure ventral or ventro-lateral to the anechoic urinary bladder in transverse section. Mild involvement was more readily visualized on longitudinal section as mixed anechoic to hypo echoic tubular structure.

Ultrasonography and abdominal palpation were found as effective diagnostic aids for pyometra in the present investigations. Radiography can be used as an important ancillary aid in diagnosis when used in conjunction with other clinical and hematological features because false positive or false negative results are not uncommon.

It thus, appears that accurate diagnosis of pyometra can only be made by a combination of these techniques and a single test may not be conclusive. Despite all the modern ancillary aids to diagnosis, nothing can justify the omission of a thorough history and clinical examination.

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