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Research Article

BACTERIOLOGICAL AND CYTOLOGICAL STUDIES OF ENDOMETRITIS IN BUFFALOES

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ABSTRACT
Endometritis is most common problem in buffaloes affecting productivity and fertility. For the present study, thirty two endometrial discharge samples were collected from infertile buffaloes after thorough rectal examination and in absence of palpable uterine abnormalities. Uterine aspirate was collected aseptically and carefully by sterile uterine catheter for bacteriological and cytological examination. Bacteriological examination of uterine aspirate samples yielded majorily *Salmonella* (34.37%) followed by *Staphylococcus* (28.12%), *E.coli* (21.87%) and *Pseudomonas* (15.62%). Endometrial cytological smears in nine cases revealed more number of neutrophils along with epithelial cells indicating acute endometritis. Lymphocytes and few polymorphonuclear cells were observed in addition to epithelial cells in eleven samples indicating sub acute endometritis cases. Twelve endometrial cytology cases revealed lymphocytes, few plasma cells in addition to epithelial cells and mucin strands indicating chronic endometritis.

Key Words: *Endometritis, Endometrial Cytology, Infertility in Buffaloes*

INTRODUCTION
Incidence of endometritis in Andhra Pradesh is the second most commonly encountered reproductive disorder.Altered uterine environment in sub clinical or clinical endometritis contribute to failure of fertilization or early embryonic death (Singh *et. al.,* 1983; Hussain and Daniel, 1990). Generally, uterine infections are classified as nonspecific infections (Bekana *et. al.,* 1994; Bonnett and Martin, 1995; Leblanc *et. al.,* 2002) and are considered to be main cause of endometritis (Elliot *et. al.,* 1968; Dholakia *et. al.,* 1987) and repeated conception failure (Sharma *et. al.,* 1988; Singia *et. al.,* 1993; Singh *et. al.,* 1996). Pathogenic microorganisms in uterus cause inflammation, histological lesions of endometrium (Bonnett *et. al.,* 1991; Sheldon *et. al.,* 2003; Azawi, 2008) affects productivity and fertility (Bondurant, 1999).
The indiscriminate use of antibiotics resulted into non-recovery of animals due to development of antimicrobial resistance. Therefore isolation and identification of infectious agent is prerequisite for adopting suitable therapeutic strategies (Prajapati *et. al.,* 2006). Combination of bacterial culture and endometrial cytology were one of the commonly used practical methods for diagnosing endometritis (Neilsen, 2005).

MATERIALS AND METHODS
A total of 32 infertile buffaloes with history of conception failure or abnormal discharges were identified and utilized for uterine aspirate collection after thorough rectal examination of reproductive tract and in absence of palpable uterine abnormalities. After thorough clinical examination at estrus phase, a fluid (2-3 ml approximately) was aspirated from uterine lumen using sterile uterine catheter and transferred into sterile tubes, then transported to laboratory aseptically and care fully at 4^{o}c. The fluid was then smeared and stained by Papanicolaou and Giemsa staining methods (Humason, 1972). Swabs from the uterine discharge samples were collected in sterile conditions and kept in nutrient broth. After 24 hrs, the growth

was streaked on different suitable Medias for isolation of bacterial organisms as described by Noel *et al.*, (1984).

RESULTS AND DISCUSSION

The results of bacteriological examination of 32 uterine biopsies from infertile buffaloes are presented in Table.1. Bacteriological examination of uterine aspirate samples from infertile buffaloes revealed different single type of bacteria in 14 cases (43.75%) and mixed bacterial isolates in18 cases(56.25%) of samples. The over all frequencies of bacteria isolated are *Salmonella* (34.37%) followed by *Staphylococcus* (28.12%), *E.coli* (21.87%) and *Pseudomonas* (15.62%). Prajapati *et al.*, (2006) isolated *Staphylococcus* (36.17%), *Bacillus* (14.8%), *E.coli* (12.76%) *Proteus* (10.65%), *Streptococci* (10.6%), *Pseudomonas* (8.5%) and *Salmonella* (6.38%). Bacteria obtained from acute endometritis cases were *Salmonella E.coli*, *Staphylococci* and *Klebsiella.* From Sub acute endometritis cases *Salmonella E.coli*, *Pseudomonas, Pasteurella* and *Staphylococci* were isolated. Bacteria obtained from chronic endometritis were *Salmonella, E.coli, Pseudomonas, Staphylococci* and *Streptococci*.

Table 1: Isolation of bacteria in endometrial biopsies of infertile buffaloes

Condition (Infertile animals)	No. of samples	Positive for bacterial isolates	
		Single (43.75%)	Mixed (56. 25%)
Acute endometritis	9	4	5
Subacute endometritis	11	5	6
Chronic endometritis	12	05	7

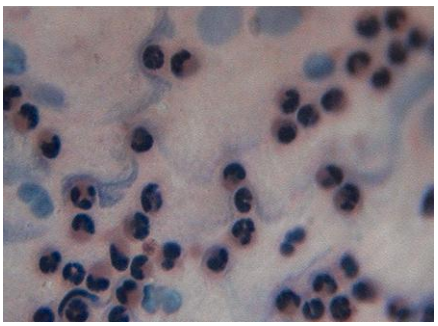

Figure 1: Acute endometritis : More number of neutrophils in endometrial cytological smears Papanicolaou x 700

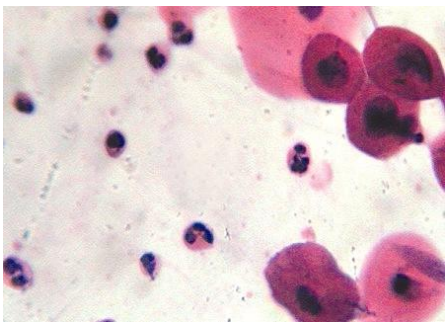

Figure 2: Acute endometritis : Endometrial cytology showing more number of neutrophils H & E x 700

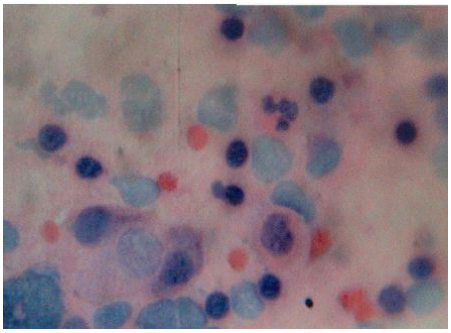

Figure 3: Sub acute endometritis : Note few neutrophils and lymphocytes in endometrial cytology smear H & E x 700

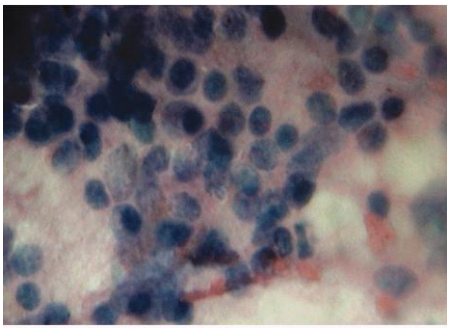

Figure 4: Chronic endometritis : Plasma cells and lymphocytes in endometrial cytology smears Giemsa x 700

Javed and Khan (1991) isolated *corynebacterium*, *Bacillus* and *Proteus* in addition to *E.coli*, *Staphylococcus* and *Streptococcus* in mild endometritis. Messier *et al.*, (1984), Singla *et al.*, (1991) and Azawi *et al.*, (2008) isolated *Escherichia coli* as the predominant bacterial isolate in majority of endometritis cases. *E.coli* was the predominant organism isolated in cases of sub acute endometritis. *Staphylococcus* was found to be predominant organism isolated in repeat breeder buffaloes according to (Ahmed and Bhattachryya, 2005; Prajapati *et al.*, 2006; Gani *et al.*, 2008). Uterine samples from chronic endometritis revealed *Staphylococci* as predominant organism. Shukla and Sharma (2005) isolated *E.coli* (18.75), *Corynebacterium* (15.64%) *Bacilli* (14.06%), *Staphylococci* (12.05%), *Pseudomonas* (12.50%) and *Micrococcus* (3.12%) in repeat breeding cows.

Cytological examination of nine endometritis cases revealed more number of neutrophils in addition to epithelial cells (Figure 1&2). Similar observations were made by Solmon Raju *et al.*, (2006) and Virmani *et al.*, (2007). Cytological examination of eleven endometritis cases revealed more number of lymphocytes and neutrophils indicating subacute endometritis (Figure 3). Similar observations were reported by Chapwanya *et al.*, (2009). Endometrial cytology of twelve endometritis cases revealed lymphocytes and few plasma cells indicating chronic endometritis (Figure 4). Similar observations were made by Virmani *et al.*, (2007).

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