

PATHOLOGICAL CONDITIONS IN GENITAL TRACT OF FEMALE BUFFALOES (*BUBALUS BUBALIS*)

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ABSTRACT

Female genital tracts of buffaloes (n=760) collected from different slaughter houses of Rajasthan (India) were examined, irrespective of age groups (8-15 years) and breeds. Out of these specimens, 266 (35.0%) suspected for abnormalities were selected and they revealed 323 pathologies in one, two or three organs in the same genital tract. Maximum pathological conditions were observed in the uterus (41.8%), followed by those in the ovaries (35.9%), cervix (9.6%), oviduct (7.7%) and vulvo-vagina (4.9%). Pathological conditions observed in the uterus included inflammatory conditions (16.09%), fibroma (0.3%) and miscellaneous conditions (25.3%) whereas, those in the ovary included oophoritis (2.7%), cystic ovaries (9.5%) and miscellaneous conditions (23.5%). Many of the observed conditions were difficult to be diagnosed through routine clinical procedures.

Key words: Buffalo, ovaries, oviducts, uterus, cervix, pathological conditions.

INTRODUCTION

Female genital tract of the buffalo has considerable biological and economic importance. Numerous abattoir surveys of buffalo genitalia have been conducted to investigate macroscopic and microscopic abnormalities (Shalash, 1958; Vale *et al.*, 1981; Sharma *et al.*, 1993; Ganorkar and Paikne, 1994; Ghora *et al.*, 1996; Sujata, 2000; Tafti and Darahshiri, 2000). Some of these surveys concentrated on one or two organs of the genital tract, while others included the entire genital tract. A wide variation has been recorded in the incidence of abnormalities found over different geographical locations. These findings are affected by various factors, such as incidence of diseases, amount of veterinary supervision and critical appraisal of abnormalities by the person carrying out the survey (Al-Dahash and David, 1977). The present study investigated the incidence of pathological lesions in genitalia of buffaloes from Rajasthan (India).

MATERIALS AND METHODS

The female genital tracts of buffaloes were collected from various slaughter houses of Rajasthan (India), irrespective of age groups (8-15 years) and breeds. The specimens were also collected from the carcasses of the buffaloes submitted to the Department of Veterinary Pathology, College of Veterinary and Animal Science, Bikaner, India, for routine post-mortem examinations as well as the post-mortem examinations conducted by the field veterinarians.

During gross examination, the genital organs were thoroughly examined visually and manually for the presence of various pathological abnormalities such as

colour, consistency, shape, size, cyst and tumors etc. The tissues from organs showing gross lesions were preserved in 10 per cent formal saline for routine histopathological examination. The preserved tissues were processed for paraffin embedding by acetone and benzene technique (Lillie, 1965) and stained with haematoxylin and eosin staining. Incidence was recorded on the basis of macroscopic and microscopic examination. Classification of lesions was done organwise.

The conditions of ovary were classified into inflammatory condition, cystic ovary and miscellaneous conditions. Conditions of oviducts were divided into inflammatory and miscellaneous. The uterine abnormalities were classified into inflammatory conditions, neoplasm and miscellaneous conditions, whereas cervix, vagina and vulva revealed only inflammatory conditions.

RESULTS AND DISCUSSION

A total of 760 specimens of female genital tract of buffaloes were examined. Only 266 specimens (35%) suspected for abnormalities were further processed for histopathological examination, which revealed several overlapping conditions. A total of 323 pathologies were diagnosed from 266 specimens; 209 specimens showed pathology in only one organ whereas, 48 and 6 tracts evidenced pathology in 2 and 3 organs, respectively. Maximum pathological conditions were seen in the uterus (41.8%, 135/323), followed by those in the ovaries (35.9%, 116/323), cervix (9.6%, 31/323), oviduct (7.7%, 25/323) and vulvo-vagina (4.9%, 16/323). Khan *et al.* (1989) also recorded maximum pathologies in uterus of Nili-Ravi buffaloes. The

pathological conditions observed in the uterus included inflammatory conditions (16.9%), neoplasms (0.3%) and miscellaneous conditions (25.1%, Table 1).

Pathological conditions in the uterus were recorded in 41.8 per cent cases which were slightly higher than that recorded by Mukherjee (1980). In available literature, this incidence varies from 2.82 (Rao and Rajya, 1976) to 58.00 per cent (Tafti and Darashiri, 2000). The incidence recorded in the present study was towards the higher range which might be due to aged infertile or sterile buffaloes which were usually slaughtered. In the present study, the chronic affections of uterus predominated which might be the outcome of acute conditions, ultimately making the animals infertile and suitable for slaughter.

Endometritis was classified into acute, subacute and chronic forms. A similar pattern of classification of endometritis was described by Sharma *et al.* (1993) and Tafti and Darashiri (2000). Acute endometritis was observed in 0.3 per cent genitalia, whereas 0.34 per cent cases of acute endometritis were observed by Dwivedi and Singh (1975) while a higher incidence of 5.70 per cent was observed by Mukherjee (1980). Khan *et al.* (1989) recorded endometritis in 75 out of 490 organs of Nili-Ravi buffaloes. Subacute endometritis was seen in 1.54 per cent cases, while 1.90 per cent incidence of subacute endometritis was reported by Mukherjee

(1980). Chronic endometritis was observed in 7.4 per cent cases, while in available literature incidence of chronic endometritis varied from 12.00 (Dwivedi and Singh, 1975) to 19.20 per cent (Mukherjee, 1980). The overall incidence of endometritis recorded in the present study closely resembles the value recorded by Khan *et al.* (1987). However, in other studies the incidence of endometritis varied from 1.15 (Ghora *et al.*, 1996) to 39 per cent (Tafti and Darashiri, 2000). Metritis was observed in 7.1 per cent cases during the present study, while an incidence of 9.60 per cent was recorded by Mukherjee (1980).

Uterine fibroma was observed in one (0.3%) case, while Rao and Rajya (1976) reported uterine fibroma in 0.01 per cent cases. Hydrometra and mucometra were observed in 1.85 and 2.47 per cent cases, respectively. Sharma *et al.* (1993) reported hydrometra in 2.60 per cent cases and Khan *et al.* (1992) reported mucometra in 3.33 per cent cases. However, in other studies, incidence of hydrometra varied from 0.10 (Ghora *et al.*, 1996) to 10.22 per cent (Khan *et al.*, 1987).

Endometrial glandular hyperplasia was seen in 1.54 per cent cases which included 0.92 per cent cases of cystic glandular hyperplasia and 0.61 per cent cases of adenomatous hyperplasia. Previous studies have recorded nearly similar incidence (Nair and Raja, 1976; Tafti and Darashiri, 2000).

Adenomyosis was observed in 4.95 per cent cases. Similar incidence was recorded by Tafti and Darashiri (2000). However, considerably lower incidence has been recorded in other studies (Rao and Rajya, 1976; Nair and Raja, 1976; Ghora *et al.*, 1996)

Similar to the previous findings (Dwivedi and Singh, 1975), atrophy of uterus was seen in 9.28 per cent cases. Uterine atrophy probably results from poor nutrition in buffaloes that have been infertile due to pathological conditions.

Subepithelial haemorrhage in uterus was seen in 0.61 per cent cases, while Nair and Raja (1976) recorded 0.24 per cent incidence of subepithelial haemorrhage. Mummified foetus was observed in one (0.3%) case. Nair and Raja (1976) recorded mummified foetus in 0.08 per cent cases. Higher percentage of mummified foetus during the present study might be due to comparatively less number of genitalia examined.

Incidence of perimetrial cyst was 2.78 per cent in the present study. Sharma *et al.* (1967) reported 2.90 per cent incidence of external cyst in uterus, whereas Khan *et al.* (1989) recorded inclusion cysts in perimetrium of four genitalia out of 204 reproductive organs showing pathologies.

The pathological conditions in ovaries included inflammatory conditions (2.78%), cystic ovaries (9.59%) and miscellaneous conditions. The cystic conditions included follicular cysts (8.0%) and cystic corpora lutea (1.5%). Various miscellaneous types of pathologies observed in ovaries are shown in Table 1.

Table 1: Pathological conditions observed in uterus and ovaries of female buffaloes

Name of pathological condition	No. of specimens	Percentage
Uterus		
Endometritis	29	8.97
Metritis	23	7.12
Neoplasm (fibroma)	01	0.30
Uterine atrophy	30	9.28
Adenomyosis	16	4.95
Perimetrial cysts	9	2.78
Mucometra	8	2.47
Hydrometra	6	1.85
Endometrial glandular hyperplasia	5	1.54
Cystic glandular hyperplasia	3	0.92
Adenomatous hyperplasia	2	0.61
Subepithelial haemorrhage	2	0.61
Mummified fetus	1	0.30
Total	135	41.8
Ovary		
Oophoritis	9	2.78
Cystic ovaries	31	9.59
Parovarian cysts	11	3.40
Persistent corpora lutea	10	3.09
Ovarian hypoplasia	10	3.09
Sub-active ovaries	24	7.43
Sclerosed ovaries	8	2.47
Follicular atresia	9	2.78
Anovular chord	1	0.30
Folliculoids	3	0.92
Total	116	35.9

However, the present incidence was slightly less than the observations of Dwivedi and Singh (1971). In literature this incidence varied from 7.47 (Rao and Rajya, 1976) to 48.0 per cent (Dwivedi and Singh, 1971). Since the aged and infertile buffaloes were included in the present study, the incidence of ovarian abnormalities was towards the higher range and almost close to those recorded by Dwivedi and Singh (1971). Khan *et al.* (1989), however, recorded ovarian adhesions in 67 ovaries out of 490 reproductive organs of buffaloes (adult and heifers) examined.

Clinical incidence of the various ovarian abnormalities recorded in the present study is not seen. Since aged and sub-fertile buffaloes are usually slaughtered, it is likely that such buffaloes are not examined clinically or that many conditions are difficult to be diagnosed through routine clinical procedures.

The pathological conditions observed in oviducts were epithelial hyperplasia (4.6%), hydrosalpinx (1.8%), acute (0.3%) and chronic (0.93%) salpingitis. Previous studies on the pathological conditions of oviducts of buffaloes recorded a higher (Sujata, 2000) or lower incidence (Rao and Rajya, 1976) compared to the present study.

The significance of conditions recorded in the present study is difficult to interpret because the conditions are less likely to be recorded clinically except in cases of gross enlargements of the oviducts that can be palpable. However, their presence in slaughtered buffaloes reflects that probably such buffaloes form a part of subfertile buffaloes slaughtered due to reproductive failure.

The pathological conditions observed in cervix were chronic cervicitis (9.6%), whereas those in the vagina and vulva were granular vulvo-vaginitis (4.9%). In the previous studies, the incidence of pathological conditions of cervix varied from 0.52 (Rao and Rajya, 1976) to 11.60 per cent (Mukherjee, 1980), while 7.60 per cent incidence of granular vulvo-vaginitis was recorded by Mukherjee (1980).

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