RESEARCH ARTICLE

Abattoir Survey of Genital Abnormalities in Jaffrabadi Buffaloes

KB Vala[1]*, GB Solanki[2], DT Fefar[3], DN Borakhatariya[4], RJ Raval[5]

Abstract

The present study was conducted to address the prevalence and type of pathological conditions in genitalia of 100 culled Jaffrabadi buffaloes (*Bubalus bubalis*). Out of 100 reproductive tracts examined, 24 were normal and 76 had gross abnormalities. Among the 184 affections observed, either single or multiple, the cervical affections were found to be the maximum 84 (45.65%) followed by uterus 50 (27.17%), ovary and bursa 29 (15.76%), fallopian tube 16 (8.70%) and vagina 5 (2.71%). Out of 50 uterii examined for the histological lesions, endometritis was observed to the extent of 72 % (36 genitalia). Based on histopathological findings, uterine lesions were classified as an acute (13.89%, n = 5), subacute (19.45%, n = 7) and chronic (66.67%, n = 24) endometritis. Among the oviducts, 16 (8.70%) tubal affections were noticed to be of salpingitis. Of these, mild (+), moderate (++) and severe (+++) degree of salpingitis was found in 3 (18.75%), 4 (25.00%) and 9 (56.25%) fallopian tubes, respectively. Biometrically, right side ovary, fallopian tube as well as uterine horn were found to be larger than the respective left organs. The study concluded that about half of the culled Jaffrabadi buffaloes have acquired cervical affections, therefore it is recommended that care should be taken while doing AI or clinical handling of the female genitalia, which can adversely affect the fertility status of animals.

Keywords: Abattoir, Genitalia, Hydrosapinx, Jaffrabadi, Pyosalpinx, Salpingitis.

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Introduction

Normal anatomical female reproductive tract is essential for the fruitful conception and full-term carriage. Complete sterility is probably less important than subfertility or infertility because sterile animals are few in comparison to those having a transient form of reproductive disorders. However, mild uterine abnormalities are frequently identified only on examination of the genital tract at post-mortem (Kessy and Noakes, 1985, Perumal *et al.,* 2017). Inflammatory condition of tubular genitalia leads to the unfavorable uterine environment for fertilization of ovum and survival of zygote. The oviduct is an important organ in mammalian reproduction because the reproductive processes of male and female gametes occur in the oviduct (Hunter, 1988; Ellington, 1991). In our earlier study cervical affections were predominant in the abattoir genitalia of slaughtered Surti buffaloes (Vala *et al.,* 2011). Moreover, the literature on genital abnormalities in Jaffrabadi buffaloes is meager (Kodagali and Kerur, 1968). For successful fertilization, an accurate and normal environment of the oviduct is important. In view of these facts, the present study was chosen to know the accountability of congenital and/or acquired anatomical affections of genital organs in culled Jaffrabadi buffaloes in their home tract.

Materials and methods

A total of 100 genital organs of freshly slaughtered culled Jaffrabadi buffaloes were collected (irrespective of parity) from the local abattoir of Junagadh, Gujarat for studying the incidence of gross lesions. The genital organs collected were transferred to a lab in a thermocol box for examination within one hour of collection. Initially, all genitalia were washed with the freshwater, and then gross detailed examination was carried out.

Gross Examination

The gross structural abnormalities whether of congenital or acquired and of unilateral or bilateral involvement were recorded following macroscopic examinations of the dissected organs. The acquired abnormalities designated as adhesions, confined to fibrous strands of connective tissue

[1-5]Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Science and AH, Junagadh Agricultural University, Junagadh, Gujarat, India

Corresponding Author: KB Vala, Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Science and AH, Junagadh Agricultural University, Junagadh, Gujarat, India, e-mail: drkkvala@gmail.com

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bands involving the ovary, bursa, oviduct or anterior part of the uterine horn, singly or in combination, were recorded. The ovaries were examined for hypoplasia, aplasia, cyst or functional structure like follicle or corpus luteum. The fallopian tubes were examined for congenital defects as well as salpingitis, hydrosalpinx, pyosalpinx. The uterus was examined for perimetrical cyst, endometritis, hydrometra, and pyometra. The cervix was examined for the presence of any enlargement, hardness, cyst, kink, os duplex, prolapsed rings, and vagina for persistent hymen, vaginitis or abnormal discharge if any. The percent frequency of each disorder was found out using descriptive statistics.

Biometry of Genitalia

It included the length and diameter of the cervix as well as both uterine horns. Length, width, and height of the ovaries were measured as anterior pole to posterior pole, dorsal surface to ventral surface and hilus to free border, respectively, with the help of digital Vernier Caliper with an accuracy of 0.02 mm. Similarly, the length, width, and height of ovaries were also measured. The data were statistically analyzed using ANOVA.

Histopathological Investigation

Following gross examination of all 100 reproductive tracts, both the fallopian tubes and both uterine horns of apparently affected genital organs were collected in 10% formalin for histopathological investigation. They were first washed thoroughly with running tap water, dehydrated in different grades of alcohol, cleaned in benzene and finally embedded in paraffin wax. Section of 4–5 µ thickness was cut and stained with hematoxylin and eosin staining. All the slides were examined under low and high power (10× and 45×) microscope for the detection of pathological/structural changes.

Results and Discussion

Abattoir Survey of Genitalia

Out of 100 female buffalo genitalia examined, gross abnormalities were found in 76 specimens, whereas 24 were found apparently normal. The incidences of various abnormalities found in different parts of the genitalia are shown in Table 1. The frequency of occurrence of various detectable abnormalities in different parts of reproductive tracts of buffaloes varied considerably. Among the total affections observed in abattoir genitalia, the cervical affections were found to be the maximum 84 (45.65%) followed by uterus 50 (27.17%), ovary and bursa 29 (15.76%), fallopian tube 16 (8.70%) and vagina 5 (2.71%).

In present study, pathological lesions were observed in 76 genitalia out of 100 examined accounting for an incidence of 76.00 per cent, which was higher than the reports of Azawi and Ali (2011) and Saxena *et al.* (2006) as 53.3% and 35.0%, respectively, while very low incidence of 3.98%, 6.54%, and 10.35% has been documented by Mittal *et al.* (2009), Mittal *et al.* (2010) and Ananda and Srilatha (2007), respectively. In contrast, Tomar *et al.* (2002) and Modi *et al.* (2011) recorded 100.0% abnormalities in culled she-buffalo genitalia. The pathological conditions observed in ovaries included para ovarian cyst (48.27%), ovariobursal adhesions (37.93%), luteal cyst and follicular cyst (6.90%). The frequency of para ovarian cyst in the present study was much higher than 4%

Table 1: Genital abnormalities (%) in the reproductive organs of she-buffaloes (n = 100)

Parts of the genital tract	*Gross genital abnormalities (%)*				*Total disorders (%)*
Ovary and Bursa	Paraovarian cyst	Ovarobursal adhesions	Luteal cyst	Follicular cyst	---
	48.27 (14)	37.93 (11)	6.90 (2)	6.90 (2)	15.76 (29)
	Gross enlargement				
Oviducts	Hydro-salpinx	Pyosalpinx	Others	---	---
	25.00 (4)	31.25 (5)	43.75 (7)	---	8.70 (16)
Uterus	Perimetritis	Endometritis	Cyst on perimetrium	---	---
	18.00 (09)	72.00 (36)	10.00 (5)	---	27.17 (50)
Cervix	Kinked cervix	Cervical ectropion	Cervical cyst	Cervical obstruction	---
	72.62 (61)	20.24 (17)	2.38 (2)	4.76 (4)	45.65 (84)
Vagina	Vaginitis	---	---	---	---
	100.00 (5)	---	---	---	2.71 (5)

Figures in parenthesis indicate the number of genital organs

reported by Azawi *et al.* (2008) and Fathalla *et al.* (2000). The incidence of ovariobursal adhesion observed in the present investigation (37.93 %) was also quite higher than 6.4% and 10.4% reported by Azawi *et al.* (2008) and Alwan *et al.* (2001), respectively.

The pathological conditions encountered in oviduct were hydrosalpinx and pyosalpinx to the tune of 25.00% and 31.25%, respectively. Saxena *et al.* (2006) reported 1.8% cases with hydrosalpinx. Furthermore, maximum abnormalities were found in the cervix (45.65%) which is in contrary to the Saxena *et al.* (2006) and Arata (2015), who encountered maximum abnormalities in uterus 41.8% and 25.2%, respectively. The percentage of kinked cervix obtained in the present investigation (72.62%) was much higher than the report of Kodagali and Kerur (1968) in Jaffrabadi buffalo genitalia. The probable cause behind the higher prevalence of kinked cervix in the present study could be non-qualified local quack engaged with AI activity in the region. Among vaginal disorders, the only vaginitis found in the present investigation (100 %), whereas Kodagali and Kerur (1968) recorded the lower incidence of vaginitis as 22.22 % only Jaffrabadi buffalo genitalia.

Biometry of Genitalia

The mean (± SE) length and width of the cervix were found to be 8.09 ± 0.13 and 2.64 ± 0.03 cm, respectively. The mean length and width of left uterine horns were found to be 34.90 ± 0.03 and 2.97 ± 0.03 cm, and those for the right horns were 35.19 ± 0.54 and 3.07 ± 0.03 cm, respectively. The average length and width of the left oviduct were observed to be 23.04 ± 0.08 and 0.02 ± 0.01 cm, and those of the right oviduct 23.24 ± 0.18 and 0.03 ± 0.01 cm, respectively. The mean length, width, and height of the left ovary were found to be 2.53 ± 0.03, 2.14 ± 0.04 and 1.88 ± 0.02 cm, and the corresponding values for the right ovary were 2.72 ± 0.02, 2.26 ± 0.04 and 1.92 ± 0.02 cm, respectively. Biometrically, right ovary, right fallopian tube as well as right uterine horn were found to be little larger than the respective left organs but did not differ significantly. It was also hard to find any report in the literature on biometry of Jaffrabadi buffalo genitalia. The present findings, however, were in line with those documented for Murrah breed (Sane *et al.,* 1982).

Histopathological Findings

Among the 50 organs examined histopathologically, the lesions of endometritis were observed to the extent of

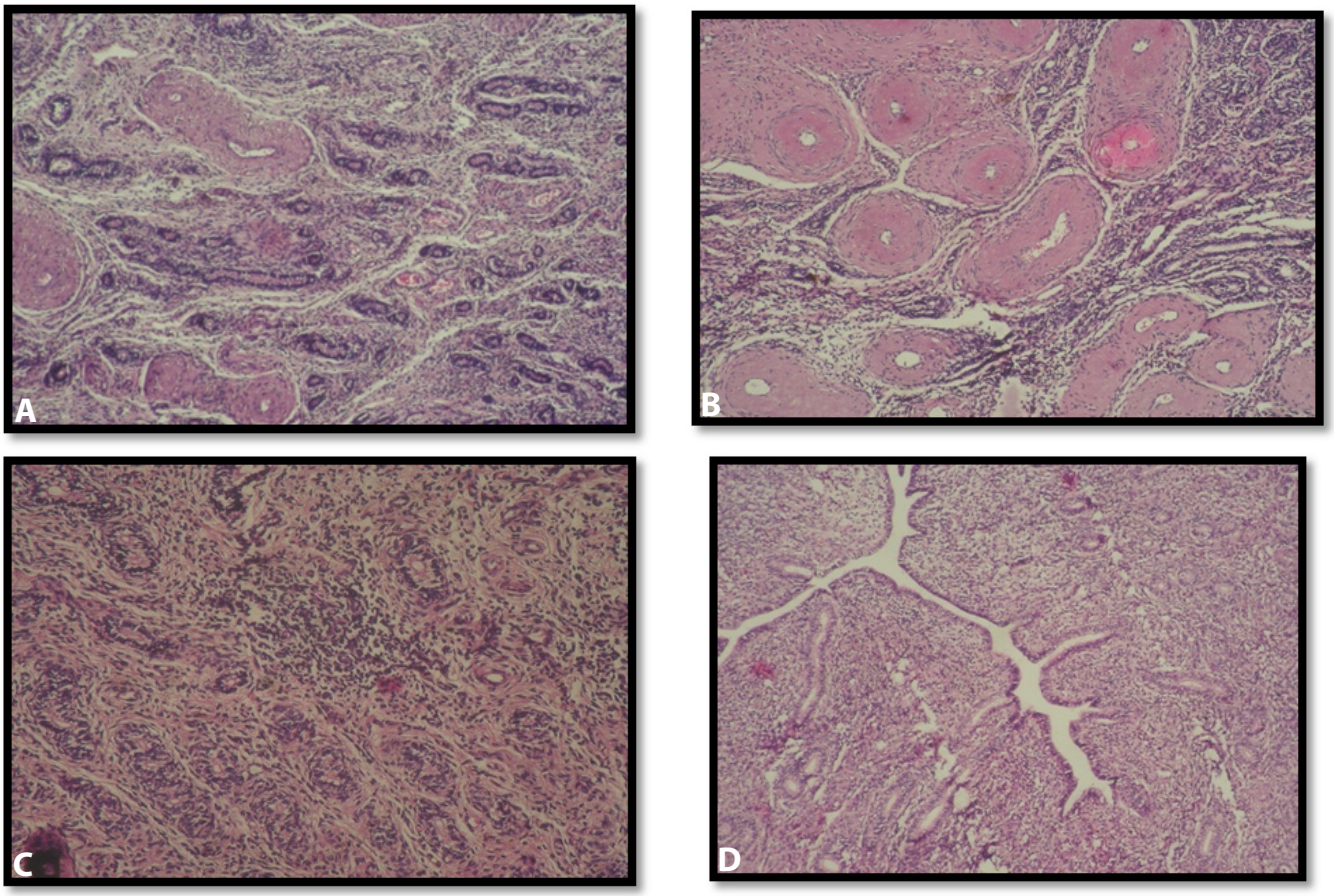

Fig. 1: Histological lesions in various types of endometritis and salpingitis (A) Acute endometritis, (B) Subacute endometritis, (C) Chronic endometritis, (D) Salpingitis

72 percent (n = 36), which included acute (13.89%, n = 5), subacute (19.45%, n = 7) and chronic (66.67%, n = 24) endometritis. Similarly, pathological lesions were found in 16 oviducts (Fig. 1), which covered mild (+), moderate (++) and severe (+++) degree of salpingitis 3 (18.75%), 4 (25.00%) and 9 (56.25%) fallopian tubes, respectively. The histopathological incidence of endometritis found (72 %) was much higher than the findings of Azawi and Ali (2011) and Moghaddam and Mamoei (2004), who reported 22.4% and 25% prevalence of endometritis, respectively. On the other hands, much lower prevalence (2.61%) of endometritis was obtained by Sharma *et al.* (1993).

Conclusion

Etio-pathologically, more than two-third of culled buffaloes were having either single or multiple gross abnormalities. The acquired cervical affections were found in half of the culled buffaloes, suggesting sequelae of multiple cervical insults/ injuries while handling the female genitalia at parturition and/or AI at the field level. Biometrically, right side ovary, fallopian tube as well as uterine horn were found to be larger than the respective left organs. The deteriorated genital health observed may be the cause of infertility and culling of the animals.

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