also be used as a selection criterion to estimate stress resistance and meat quality of transported pigs. Szilagil et al. (1989) also reported increased CPK activity after transport as seen in this study.

**Summary**

Neither the halothane genotype nor transportation influence the growth performance, rate of gain and feed conversion efficiency of pigs. The stress related enzymes, Lactate dehydrogenase (LDH) and Creatine phosphokinase increased due to transportation. The CPK values varied significantly between genotypes and significantly higher for transported group (P<0.05). The study showed that there was no long term effect of stress due to transportation which affected the growth performance. Creatine phosphokinase level in blood can be used as efficient tool in determining stress susceptible pigs.

**References**


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**Prevalence of Uterine Neoplasia in Slaughter House Cross Bred Genitalia**

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**Abstract**

The purpose of the present study was to ascertain the prevalence of uterine neoplasia in slaughter house cross bred genitalia. To attain the objective, cytopathology, histopathology and AgNOR were taken up. Cytological studies revealed abnormal cellular pattern suspicious of neoplasia in 82.69 per cent genitalia. Based on histopathological studies 73.07 per cent neoplasia, 21.15 per cent dysplasia and 5.76 per cent chronic endometritis were found. The neoplasms recorded were adenocarcinoma (65.78%), lymphosarcoma (7.90%), haemangiosarcoma and haemangiosarcoma with adenocarcinoma both accounted to 5.26 per cent each. Other neoplasms reported were histiocytoma, fibrosarcoma, leiomyosarcoma, myxosarcoma, and leiomyosarcoma with haemangiopericytoma, leiomyosarcoma with adenocarcinoma and lymphosarcoma with adenocarcinoma each accounted to 2.63 per cent. The mean AgNOR count varied from 5.2 to 8.7 with a mean of 6.45 ± 0.06 per cell in neoplasia.

**Key words** : Slaughter house genitalia, uterine neoplasia, cytopathology, histopathology.

The factors contributing to infertility are multifaceted in nature. Though uterine neopla-
sia as one of the causes of infertility has been established long back, till date meager attention was paid in this area. In the recent past, in our laboratory the incidental occurrence of uterine adenocarcinoma in repeat breeding cross bred cows (Moulikrishna et al. 2010) and preliminary studies on uterine neoplasia in slaughter house buffalo specimens (Anusha et al. 2012) directed the authors to take up the present investigation. The objective of the present study was to ascertain the prevalence of uterine neoplasia in cross bred cows in concert with cytological and histopathological studies.

Materials and Methods

A total of 52 genitalia from slaughtered cross bred cows culled on account of unproductivity were procured from the neighbouring Kerala state. Soon after the procurement each specimen was placed in individual self locking polyethylene covers and transported to the laboratory within 15 hrs under strict cold chain. All the genitalia were thoroughly examined for gross changes. Cyclicly was established based on the presence of either corpora lutea or appreciable follicles. After excising the uterus impression smears for cytological studies and representative endometrial tissue for histopathological examinations were collected. The cytological smears obtained were stained with Leishman’s stain and a total of 100 cells were counted under 100x. Endometrial tissue samples were fixed in 10 per cent neutral buffered formalin and processed for histopathological studies. Four to six microns thickness sections were made and stained with haematoxylin and eosin (Fischer et al., 2008). Special staining techniques viz., Van Gieson (Bancroft and Stevens, 1996) and AgNOR (Krishnamurthi and Paliwal, 1998) were also employed. AgNOR counts were determined through computer aided microscopic image analysis system (KS 300 image analysis system, Zeiss/Knotron, Germany) at Department of Veterinary Pathology in Madras Veterinary College, Chennai, India.

Results and Discussion

Out of 52 slaughter house specimens, 30.76 (16) and 69.23 per cent (36) were found to have cyclic and acyclic ovaries, respectively. In the present study, grossly uterine wall thickening, purulent discharge, slimy discharge, whitish foci over endometrium, endometrial congestion, petechiae over caruncles and atrophied caruncles (Flattened endometrium) were observed in 61.53 (32/52), 21.15 (11/52), 9.61 (5/52), 21.15 (11/52), 11.53 (6/52), 7.69 (4/52) and 5.76% (3/52) uteri, respectively. Cytological studies revealed abnormal cellular pattern suspicious of neoplasia in 82.69 per cent (43/52) specimens.
while 17.30 per cent (9/52) presented normal epithelial cellular pattern. Detailed histopathological studies revealed neoplasia in 73.07 per cent, dysplasia in 21.15 per cent and chronic endometritis in 5.76 per cent specimens. The histological lesions include adenocarcinoma (65.78%), lymphosarcoma (7.9%), haemangiosarcoma (5.26%), haemangiosarcoma with adenocarcinoma (5.26%), histiocytoma (2.63%), fibrosarcoma (2.63%), leiomyosarcoma (2.63%), myxosarcoma (2.63%), leiomyosarcoma with haemangiopericytoma (2.63%), leiomyosarcoma with adenocarcinoma (2.63%) and lymphosarcoma with adenocarcinoma (2.63%). In adenocarcinoma, histiocytic adenocarcinoma, scirrhous adenocarcinoma, clear cell adenocarcinoma and papillary adenocarcinoma were accounted to 20 (5), 12 (3), 12 (3) and 4% (1), respectively. The mean AgNOR counts varied from 5.2 to 8.7 (6.45 ± 0.06 per cell) in neoplasia, 4.0 to 4.3 (4.17 ± 0.09 per cell) in dysplasia and 3.1 to 3.2 (3.16 ± 0.10 per cell) in chronic endometritis. The AgNOR counts significantly differed between groups (P ≤ 0.05). In acyclic group 69.44 per cent (25/36) specimens were found to have neoplastic lesions. While in cyclic group 81.25 per cent (13/16) specimens expressed neoplastic changes. Based on the clinical signs and gross observations, uterine wall thickening, slimy discharge, whitish foci and congestion might be considered significant enough to suspect histopathological alterations, since in the present study in a significant per cent of specimens these changes were associated with neoplasia. However, in genitalia which were exclusively positive for chronic endometritis such a relation was not found. Similar observations were drawn earlier by Anusha et al. (loc.cit.) in slaughter house buffalo genitalia. Whereas in other reports, attention was not drawn on to notice similar type of gross changes because the methodology adopted in those studies was a different (Azawi and Al-Sadi, 2010; Stilwell and Peleteiro, 2010).

Cytological studies revealed abnormal cellular pattern in 82.69% (43/52) specimens, while 17.30% (9/52) presented normal epithelial cellular pattern. However, detailed histopathological studies finally revealed neoplasia in 73.07%, dysplasia in 21.15% and chronic endometritis in 5.76% specimens. It implied that specimens with abnormal cellular patterns were either positive for neoplasia or dysplasia, while normal cellular patterns were found in chronic endometritis. The present findings were comparable with Anusha et al. (loc.cit.) who reported abnormal cellular pattern in 73.97% against 26.03% normal cellular pattern. Finally, through detailed histopathological studies, they observed neoplastic changes in 52.05% uteri of slaughter house buffalo genitalia. Elsewhere, it was stated that normal cellular pattern might direct towards either neoplasia or dysplasia, but inadequate to distinguish the two. Cytological smears with normal epithelial cellular pattern might be negative for either neoplasia or dysplasia (Atkinson, 2004; Anusha et al., loc.cit.). Neoplastic cells do not adhere closely together and consequently shed readily. These exfoliated cells could be readily detected on microscopic examination. In women, cytopathological data was available and the present observations were in line with Atkinson (loc. cit) and Matias and Beatriz (2008). Further, in livestock species largely sporadic case reports based on histopathological studies were published (Azawi and Al-Sadi, loc.cit; Stilwell and Peleteiro, loc.cit).

In veterinary practice cytopathological studies were proved to be worthy enough
to confirm Transmissible Venereal Tumour (Jain et al., 2002). The present findings were in accordance with the Anusha et al. (loc. cit). If the cytological smears revealed normal cellular pattern, the prevalence of both neoplasia and dysplasia could be ruled out. The prevalence of uterine neoplasia found in the present study was not in line with the earlier publications (Iglesia et al., 1995; Tafti and Darahshiri, 2000), who reported ≤1 per cent in slaughter house specimens. In those studies, the sampling methodology was entirely different from the present study. They considered only those genitalia that had grossly neoplastic changes as against detailed systematic investigations in the present study. Of course, sporadic cases of uterine neoplasia in cows (Stilwell and Peleteiro, 2010) and buffaloes (Azawi and Al-Sadi, loc. cit) were reported. In the present study, the prevalence of neoplasia was higher than of Anusha et al. (loc. cit), which could be attributed to socio-ethical and managerial issues.

In the present study, AgNOR counts in neoplastic conditions varied from 5.2 to 8.7 with a mean of 6.45 ± 0.06 per cell. The values were in correlation with human (Dube and Govil, 1995; Kaushik et al., 1999; Akhtar et al., 2005; Rad et al., 2010) and bovine (Anusha et al., loc. cit) literature. Whereas, in dysplasia and chronic endometritis AgNOR counts varied from 4.0 to 4.3 and 3.1 to 3.2 with a mean of 4.17 ± 0.09 per cell and 3.16 ± 0.10 per cell, respectively. In the present study, AgNOR counts significantly differed (P ≤ 0.05) between groups and were in accordance with the Dube and Govil (loc. cit) Akhtar et al. (loc. cit) and Anusha et al. (loc. cit). Anusha et al. (loc. cit) reported mean AgNOR counts for neoplasia, dysplasia and chronic endometritis to be 6.76 ± 0.14, 5.05 ± 0.08 and 3.08 ± 0.19, respectively in slaughter house buffalo specimens. It implied that in the tumor cells the number of mitotic bodies increases as the AgNOR specifically stains the mitotic bodies that appear as black color dots. AgNOR counts increased from normal cells towards the dysplastic cells and neoplastic cells.

Though cytological studies revealed 82.69 per cent abnormal cellular pattern in slaughter house genitalia but detailed histopathological studies confirmed 73.07% neoplasia and 21.15% dysplasia in slaughter house genitalia. Though the cytology was abnormal in 82.96 per cent in slaughter house genitalia the same was not reflected upon histopathological studies. Whereas, in chronic endometritis cytological smears revealed only normal cellular patterns. It implied that if the cytological smears were negative for abnormal cellular pattern as was observed in chronic endometritis presence of neoplasia might be ruled out. Further, it was stated that if the cytological smears were presenting abnormal cellular pattern, it might be directing towards either dysplasia or neoplasia. However, confirmation could be arrived by detailed histopathological studies.

Summary

It was evidenced that the data from the cytology studies was not represented a mirror image when compared with the data from histopathological studies. Finally it was concluded that tumors of uterine origin of bovine species might be considered as one of the precipitating factors to female infertility and special attention may be paid to cytopathology studies so as to initially screen the chronic unproductive animals for the occurrence of neoplasms.

References


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Effect of Feeding Detoxified Jatropha (Jatropha Curcas) Meal on Immune Status of Growing Lambs

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Abstract

Jatropha (Jatropha Curcas) is a member of the Euphorbiaceae family used for biodiesel production which leaves a meal with high crude protein value and good amino acid profile. But, it contains various toxic compounds such as phorbol esters, lectins (curcin), phytates, saponins and trypsin. Therefore, raw jatropha meal was detoxified with suitable method and fed to growing lambs to overall health status of the animals was assessed through cell mediated immunity (CMI) and humoral immune (HI) response.Comparable immune response was observed in different dietary groups fed with graded levels of dJM and hence it can be concluded dJM can be incorporated in the diets of growing lambs replacing 37.5% nitrogen moiety of soybean meal with no adverse effect on cell mediated and humoral immune response and thus on overall health status of lambs.

Key words: growing lambs, immune status, jatropha meal.

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