

Original Research Article

<https://doi.org/10.20546/ijcmas.2020.906.160>

## Incidence of Delayed Puberty in Cattle Heifers in and around Jabalpur

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### ABSTRACT

The incidence of delayed puberty was studied in 500 cattle heifers in and around Jabalpur. The heifers with history of non-exhibition of estrus and smooth ovaries (without follicles or corpus luteum) during gynaecological examination were considered as delayed pubertal. The overall incidence of delayed puberty was found 44.44%. The analysis of result on breed wise incidence revealed 52.92%, 29.21%, 57.89% and 41.67% in non-descript, crossbred, Gir and Sahiwal breeds, respectively. The results revealed higher incidence of delayed puberty (68.92%) in heifers with body condition score (BCS) below 2 as compared to BCS more than 2 (31.08%). It can be concluded from this study that delayed puberty is one of the cause of anoestrus and thus prolonged calving interval in rural cattle. Further, higher incidence of delayed puberty persists in indigenous and nondescript rural cattle heifers of poor body condition score.

#### Keywords

Delayed puberty,  
Cattle heifers,  
Jabalpur, Madhya  
Pradesh

#### Article Info

Accepted:  
18 May 2020  
Available Online:  
10 June 2020

### Introduction

Puberty is the period when the sexual organs are functionally developed. Puberty in heifers is characterized by first ovulation and plasma progesterone concentration above 1ng/ml (Post and Reich, 1980). The fundamental requirement for onset of puberty is the secretion of GnRH from the hypothalamus. Many factors like species, genetics, nutrition, body weight, role of different hormones, health and other managerial condition

have direct and indirect effect on growth, puberty and sexual maturity (Gupta *et al.*, 2016). The body weight gain may have greater influence on onset of puberty.

About 60 to 65% of mature body weight may be standard during starting of breeding season in heifers (Endecott *et al.*, 2013). Incidence of anoestrus in heifers has been reported between 12.37 to 64.66 percent (Luktuke and Sharma, 1978; Naidu and Rao, 1981; Sinha *et al.*, 1987).

Dantre (1997) reported 21.62 percent mean incidence of delayed puberty in crossbred heifers under farm condition. A cow maturing in early age will produce more milk in its whole lifetime. In the tropical and subtropical condition the age at puberty in *Bos indicus* is between 16 and 40 months with a mean of 25 months, *i.e.*, 6-12 months later than *Bos taurus* (Abeygunawardena and Dematawewa, 2004).

Among the reproductive disorders, delayed puberty or pubertal anoestrus is the most important and challenging problem. Delayed puberty is a problem of both farm-bred as well as heifers under rural condition.

### **Materials and Methods**

The incidence of delayed puberty was studied in 500 cattle heifers in villages adopted by university and adjoining villages in Jabalpur Madhya Pradesh. The detailed information of cattle heifers provided by the owners and findings of gynaecological examination were recorded during the study.

The age, body weight, first sign of estrus and body condition score were recorded. The suspected delayed pubertal heifers were examined per rectally for ascertaining the ovarian function *i.e.* presence of follicles or corpus luteum.

The heifers with history of non-exhibition of estrus since birth and smooth ovaries (without follicles or corpus luteum) in two consecutive gynaecological examinations at 10 days apart were considered as delayed pubertal. The incidence of delayed puberty was studied breed-wise and data were also correlated with body condition score (BCS).

### **Results and Discussion**

The incidence of delayed puberty in different breeds during study were found 52.92% in

Non-descript, 29.21% in Cross-bred, 57.89% in Gir and 41.67% in Sahiwal breed. The overall incidence of delayed puberty was observed to be 44.44% in cattle heifers (Table 01).

Almost similar incidence (31.57%) of anoestrus in crossbred heifers was also reported by Chetty and Rao (1987) whereas Luktuke (1977) reported little higher incidence *i.e.* 36.16% in crossbred heifers.

Very high incidence *i.e.* 64.24% and 59.82% in crossbred heifers were reported by Sinha *et al.*, (1987) and Singh *et al.*, (1987), respectively. However, Naidu and Rao (1981) reported low incidence (12.37%) in crossbred heifers as compared to the present study.

Higher incidence of delayed puberty in this study may be attributable to malnutrition, poor managerial practices and environmental factors as most of the animals were taken from unorganized rearing system. The data on breed-wise analysis of delayed puberty was also classified on the basis body condition score of heifers (Table 02) and the results revealed higher incidence of delayed puberty (68.92%) in heifers with body condition score below 2 as compared to BCS more than 2 (31.08%).

Among the delayed pubertal heifers of different breed, the below average body condition score was recorded 72.73% in Non-descript, 57.69% in crossbred, 63.64% in Gir and 80% in Sahiwal heifers.

Present findings supported the reports of Maina *et al.*, (2008) who concluded that the incidences of anoestrus and abnormal ovarian activity are negatively correlated to body condition score. Vacek *et al.*, (2015) reported that the heifers with good body condition score have more average daily gain and early age at first AI.

**Table.1** Breed wise incidence of delayed puberty in cattle heifers

Breed	Animal surveyed (n)	Incidence of delayed puberty	
		N	%
<b>Non-descript</b>	291	154	52.92
<b>Cross-bred</b>	178	52	29.21
<b>Gir</b>	19	11	57.89
<b>Sahiwal</b>	12	05	41.67
<b>Total</b>	<b>500</b>	<b>222</b>	<b>44.44</b>

**Table.2** Incidence of delayed puberty in cattle heifers in relation to body condition score

Breed	Delayed pubertal heifers (n)	Incidence of delayed puberty			
		BCS ≤ 2		BCS > 2	
		n	%	N	%
<b>Non-descript</b>	154	112	72.73	42	27.27
<b>Cross-bred</b>	52	30	57.69	22	42.31
<b>Gir</b>	11	07	63.64	04	36.36
<b>Sahiwal</b>	05	04	80.00	01	20.00
<b>Total</b>	<b>222</b>	<b>153</b>	<b>68.92</b>	<b>69</b>	<b>31.08</b>

It can be concluded from this study that delayed puberty is one of the cause of anoestrus and thus prolonged calving interval in rural cows. Further, higher incidence of delayed puberty persists in indigenous and nondescript rural cattle heifers especially of poor body condition score which may be due to malnutrition.

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**How to cite this article:**

Patel. P. K., S. N. Shukla and Singh. G. 2020. Incidence of Delayed Puberty in Cattle Heifers in and around Jabalpur. *Int.J.Curr.Microbiol.App.Sci.* 9(06): 1289-1292.  
doi: <https://doi.org/10.20546/ijemas.2020.906.160>