

FOETAL GROWTH PATTERNS AND WEIGHT GAIN OF UTERUS DURING GESTATION IN BUFFALOES (*Bos bubalis*)

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ABSTRACT

Studies were conducted on sixty gravid uteri of commercially slaughtered buffaloes, obtained from Hyderabad slaughter house. The average Crown Vertebral Column and Rump-length(CVR) of foetus was 4.26 cm at second month which slowly reached 54.75 cm during seventh month. The difference in CVR length of foetus was recorded 50.51 cm at seventh month which was about 13 times greater than the length of foetus at second month of gestation. The mean weight of foetus was 5.64 g at second month and 7150 g during seventh month of pregnancy, which showed about 1268 times increase during this period. The average weight of uterus with its contents at seventh month (17075 g) was 33 times greater than that of the first month (795.73 g) of pregnancy; whereas the uterus without contents (emptied uterus) increased in weight about 6 times from the first month (497.5 g) to seventh month (3050 g). During first four months of gestation both horns gained weight regularly. The difference in increase was found with the advancement of pregnancy. At seventh month the weight of gravid horn was double than that of non gravid horn.

Keywords: Buffaloes, foetal growth, uterus, weight gain

INTRODUCTION

Biometry of foeti and weight gain of uteri have been reported by many investigators. Schmidt *et al.* (1964), Abdell Raouf and El-Naggar (1968a), Luktuke (1983) and Szuba *et al.* (1988) have reported observation on weight, lengths of foeti and weight gain of gravid uterus at various stages of gestation. The present work was planned on weight, DVR-length of foetus and weight gain of gravid uterus in Pakistani buffaloes, particularly on the buffaloes of Sindh province to establish changes taking place during pregnancy. This study will help in solving problems arising due to over size of foetus and also serve as guideline in pregnancy diagnosis on the basis of size attained by the uterus in early and advanced pregnancy.

MATERIALS AND METHODS

The gravid uteri of 60 buffaloes were collected from Hyderabad slaughter house for this study. The organs were brought to the laboratory and were cleaned. The excess connective tissue, vaginal wall, ligaments and ovaries were removed leaving the cervix intact.

The gravid uterus was weighed with its contents with the help of a weighing balance. The uterine wall

was then incised and contents were laid out of the uterus. The weight of emptied uterus alongwith cervix was obtained. The gravid and non gravid horns and foetal sacs were dissected free from each other and weighed. The foetus itself was weighed and CVR-length was measured to the nearest centimeter with tape measure or vernier callipers. The estimation of the stage of gestation was made on CVR-length of the foetus according to the formula of Abdell Raouf and El-Naggar (1968b). For foeti with CVR-length measuring less than 20 cm, the age was calculated according to the formula $Y = 28.666 + 4.49 X$, where Y is the age in days and X is the CVR-length in centimeters. The formula $Y = 73.544 + 2.256 X$ was applied for calculating the age of the foetus with CVR-length of 20 cm or more. Data thus collected were analyzed by applying one way analysis of variance and correlation between age and weight gain of foetus was calculated.

RESULTS AND DISCUSSION

The observations were analyzed in seven groups on the basis of foetal age (Table 1). The average CVR-length of foetus was recorded 4.26 cm at second month of gestation when the weight was 5.64 g. The weight and CVR-length of foetus showed difference between first and second month. The CVR-length and weight of

foetus at seventh month was 54.75 cm and 7150 g, respectively. It was found that the CVR-length and weight of foetus increased slowly and regularly during progressing months of gestation. The rapid increase in CVR-length and weight of foetus was observed from third to seventh month of gestation.

Table 1: Mean CVR-length and weight gain of foetus during gestation in buffaloes.

Gestation month	No. of observations	Mean CVR length of foetus (cm)	Mean weight of foetus (g)
1	4	0.5	0.72 ± 0.28
2	15	4.26	5.64 ± 2.59
3	13	10.7	57.81 ± 50.05
4	13	17.90	275.58 ± 140.3
5	7	24.92	760.14 ± 584.0
6	6	41.50	3708.3 ± 543.87
7	2	54.75	7150.0 ± 2333.5

The weight of uterus with its contents is shown in Table 2. The average weight of uterus with its contents at second month was 795.73 g and at seventh month was 17075.0 g. The weight of uterus with its contents showed slow but continuous increase during second and third month of pregnancy. From the fourth month onwards, the increase was more rapid and became double in a months time. By seventh month of gestation

Table 2: Mean ± SD weight gain of gravid uterus during gestation in buffaloes

Gestation month	No. of observations	Wt. of uterus with content (g)	Wt. of uterus without content (g)	Wt. of gravid horn (g)	Wt. of non gravid horn (g)
1	4	517.5	497.5	247.5	225.0 ± 47.6
2	15	795.73	529.27	290.0	231.93 ± 111.3
3	13	1532.10	715.46	410.53	304.38 ± 140.7
4	13	2596.30	949.61	607.69	35.38 ± 85.6
5	7	5129.28	1365.0	867.14	497.85 241 290.7
6	6	14266.0	2675.0	1731.16	952.16 ± 217.7
7	2	17075.0	3050.0	2000.0	1050.0 ± 424.2

The weight of uterus without contents recorded at second month of gestation was 529.27 g and at seventh month of gestation it was 3050.0 g. It was observed that the uterus slowly increased in weight about 6 times from the first month to the seventh month of gestation. The weight of gravid and non gravid horns during different months of gestation is also shown in Table 2. The average weight of gravid horn at second month was 290.0 g and that of non gravid horn was 231.90 g, while at seventh month the weight of the gravid horn was 2000.0 g and that of non gravid horn 1050.0 g. The rapid gains in both horns were noted at sixth and seventh month of gestation. At seventh month the weight of gravid horn was nearly double that of non gravid horn.

it was some 33 times more in weight from the first month of pregnancy.

The CVR-length of foetus at second (4.26 cm) and seventh month (54.75 cm) observed in the present study is in close agreement with the findings of the Abdell Raouf and El-Naggar (1968b) who recorded CVR-length of 4.9 cm at the second month and 52.6 cm at the seventh month of pregnancy. Luktuke (1983) recorded the CVR-length at 4 and 14 weeks of pregnancy, where the weight of foetus was 0.68 and 241.0 g, respectively and its CVR-length at 14 weeks was 17.83 cm which is in accordance with results of the present study at the fourth month of gestation. The values presented about the CVR-length and weight of foetus in the present study are also in agreement with the findings of Szuba *et al.* (1988), who reported the average CVR-length of 10.8-28.0 cm and weight of 80-990 g in early gestation and 49.0-89 cm and 8000-31300 g in the late gestation period in cattle, respectively.

The values for weight of uterus with its contents at second month (795.73 g) and seventh month (17075 g) are in close agreement with the findings of Abdell Raouf and El-Naggar (1968a), whose findings at second and seventh month of pregnancy were 730±163 and 18639±4382 g, respectively. The weight of uterus

without contents recorded at second month (529.27 g) and seventh month (3050.0 g) in the present study is also in agreement with the results of Abdell Raouf and El-Naggar (1968a), who recorded the weight at second and seventh month as 542±18 and 3341±524 g, respectively. Schmidt *et al.* (1964) reported 600 g at second month and 5380 g at ninth month of gestation in Egyptian buffaloes. Abdell Raouf and El-Naggar (1968a) reported the average weight of gravid horns at second and seventh month 232±658 and 2028±236 g and that of non gravid horn 199±65 and 1179±365 g, respectively which is in accordance with the findings of the present study.

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