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المقاييس الدموية في أجنة الجاموس

مصود النجار ، حمدي ابراهيم ، باهي سرور

تم عمل عد كل للخلايا الدموية في أجنة الجاموس في الآونة المختلفة من الحمل ما بين تسعون يوما وحتى نهاية الحمل .
فقد زادت عدد الكريات الحمراء زيادة تدريجية كما زادت نسبة الهيماتوكريت والهيموجلوبين باضطراد . كما
لوحظ وجود زيادة معنوية في الخلايا الشبكية بين التسعون يوما والمائة والخمسون يوما من الحمل . وقد
زادت الخلايا البيضاء تدريجيا وزاد أيضا عدد الخلايا الليمفاوية بينما نقصت خلايا التروفيل بالتدريج وقد لوحظ وجود
الاستيوفيل بأعداد قليلة بعد خمسة أشهر حمل .

HEMATOLOGICAL PARAMETERS OF BUFFALO FOETUS

(With Two Tables)

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SUMMARY

The cellular elements in the blood of buffalo foetus were enumerated. The gestational period investigated ranged from ninety days to full term. The total erythrocytic count increases steadily over the range. The packed cell volume and the haemoglobin values showed progressive increase. Significant numbers of reticulocytes were present between 90th and 150th of gestation. The leucocytic count rose gradually. The number of lymphocytes increased markedly while segmented neutrophils decreased gradually. Eosinophils were present in small number from the fifth month onwards.

INTRODUCTION

As clinical and research activities related to the foetus increase, haematological values increased in importance similar to the importance of hematology in postnatal medicine. Despite the difficulties inherent in specimen collection, several studies on the development of cellular elements of the human foetal blood have been reported by PLAYFAIR, WOLFENDALE and KAY (1963) and WALKER & TURNBULL (1953). There are relatively few reports on blood of animal foetuses; blood cellular changes in pig foetus BROOKS and DAVIS, (1969), erythrocyte, and leucocyte parameters in foetal lamb UPCOTT, HEBERT and ROBINS, (1972) and cellular blood elements in developing bovine foetus HUBBERT and HOLLEN (1971) and DESEO, (1929). Informations about the blood picture of our Egyptian buffalo foetel are still not available.

The aim of the present investigation was directed to study the blood elements of buffalo foetel from the third month up to full term. It is hoped that it will be of valuable importance as a reflexion for the rate of foetal development.

MATERIALS AND METHODS

Citrated blood samples were taken by cardiac puncture of 90 buffalo foetel obtained from buffaloes passed to slaughter houses at Assiut and Cairo. The curved crown rump (CVR) was measured for each foetus and gestational period was estimated according to the formula given by ABDEL-RAOUF and EL-NAGGAR (1968). These samples were used for measuring the erythrocyte count (RBCs), haemoglobin (Hb) haematocrit% (PCV), Reticulocyte%, leucocyte count (WBCs) and differential white cell %. Methods adopted were described by COLES (1974).

RESULTS

The erythrocytic data, (RBCs), Hb content, PCV% and reticulocyte % are shown in Table, 1. The erythrocytic count showed a linear increase from 3,98 million at the third month to 9.7 million near term. The PCV and the Hb values rose to a lesser extent and each value increase two folds over the studied period. The patterns of leucocytic concentration and the differential leucocytic percentages are shown in Table 2. The total leucocytic count varied from 4.2×10^3 /cmm at the third month of gestation to 8.3×10^3 /cmm WBCs at the tenth month of gestation.

DISCUSSION

The linear increase in the erythrocytic count with the advancement of pregnancy, agrees with the work of HUBBERT and HOLLEN (1971) who reported a value of 3.84 million at 100th day to 8.29 million near term in bovine foetus. The PCV varied from 22.3% at the third month to 43.9% near term; while the Hb content ranged between 8.9 Gm/100ml and 16.1 Gm/100ml blood. These values of PCV and Hb of the present study are in close agreement with those reported by DESEO (1929) in cow foetus. Reticulocytes % were present in significant numbers between the

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third and the fourth months of gestation (9.9 and 12.3% of the total RBCs) and this decrease continues to zero near term. These changes in reticulocyte percentage was in agreement with WINTROBE and SHUMACKER (1935) in cow foetus. These behaviour of RBCs and Hb content may be attributed to the great need of Hb for the vital growth processes occurring in the foetus. SCHALM (1975) suggested that the increase in the rate of foetal growth provide a stimulus to an excess RBCs production. WINTROBE (1956) stated that in the foetus, the erythrocyte production is greater in proportion to the body weight. HUBBERT and HOLLEN (1971) found a correlation between the gestation period and production of RBCs, due to the increased iron supplement from the mothers body to the foetus.

The total leucocytic count was found to vary from 4.2×10^3 cm at the third month to 8.3×10^3 cmm WBCs at the tenth month. These data are higher than that of HUBBERT and HOLLEN (1971) who found values of 2.108×10^3 cmm at 100 days and 6.775 at term. This difference might be attributed to species variation.

The lymphocytes rose gradually till the age of five months, then it is followed by a sharp increase at the age of six months. Neutrophils showed gradual decrease through all groups till full term. Eosinophils were present in small numbers from the gestational age of five months onwards. Isolated monocytes and basophiles were seen from the fifth month till full term., but they were not recorded in the table. These gradual increase of leucocytes which was mainly lymphocytic, is acceptable, since lymphocytes are always responsible for the production of postnatal antibodies KRAFT, (1965). Basophils and monocytes in the buffalo foetus were rare. WINTROBE (1956), mentioned that the role played by such cells during the prenatal life are not yet established.

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TABLE (1)

Erythrocytic date in blood of Buffalo foetei

Foetal age (month)	No. of foetei	RBCs. ($\times 10^3$ /cmm)	PCV (%)	Hb (Cm/100)	Reticulocyte (%)
3	20	3.98 \pm 0.63	22.3 \pm 1.9	8.7 \pm 0.98	9.9 \pm 1.0
4	12	5.3 \pm 0.50	25.9 \pm 1.8	9.3 \pm 0.72	12.3 \pm 0.88
5	14	6.1 \pm 0.37	30.9 \pm 2.33	11.1 \pm 0.73	7.3 \pm 0.8
6	15	6.9 \pm 0.41	40 \pm 1.99	11.9 \pm 0.77	6.1 \pm 1.1
7	8	7.1 \pm 0.33	38 \pm 1.80	13.1 \pm 0.38	5.3 \pm 1.3
8	9	7.88 \pm 0.43	41 \pm 2.33	14.9 \pm 0.75	5.3 \pm 1.2
9	7	8.7 \pm 1.3	42.9 \pm 1.93	16.1 \pm 0.93	0.0 \pm 0
10	5	9.7 \pm 1.2	43.9 \pm 0.93	16.1 \pm 0.43	0.0 \pm 0.0

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TABLE (2)

Leucocytic data and differential white cell Percentages in Buffalo foetal

Foetal age (month)	No. of foetal	Leucocytes ($\times 10^3$ /cmm)	Lymphocyt (%)	Neutophils (%)	Eosinophils (%)
3	20	4.2 \pm 0.52	15.5 \pm 1.4	85.3 \pm 49	-----
4	12	4.95 \pm 0.24	16.3 \pm 0.65	75. \pm 63	-----
5	14	5.14 \pm 0.78	14.9 \pm 6.1	75.9 \pm 2.3	1.5 \pm 0.29
6	15	6.33 \pm 0.33	33.9 \pm 2.3	65.3 \pm 1.9	6.3 \pm 2.2
7	8	7.99 \pm 0.19	67.3 \pm 3.2	32.9 \pm 2.3	4.9 \pm 0.51
8	9	7.38 \pm 0.62	72.1 \pm 4.6	29.9 \pm 3.3	9.9 \pm 1.3
9	7	7.8 \pm 0.53	76.8 \pm 6.7	24.1 \pm 1.1	4.1 \pm 2.3
10	5	8.3 \pm 0.33	78.8 \pm 0.1	22.1 \pm 1.01	4.2 \pm 1.9

