

SOME OBSERVATIONS ON THE CYTOLOGICAL COMPOSITION OF THE AMNIOTIC FLUID IN GOATS

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Like in other ruminants, in the goat two distinct fluid filled sacs, an inner amniotic and an outer allantoic sac develop in the gravid uterus and persist throughout its gestation. As mentioned by Joseph Needham, a seventeenth century male mid-wife, the amniotic fluid is a 'private pond' of the foetus. The amniotic fluid is formed mainly by the secretions of the cells lining the foetal, umbilical and amniotic membrane tissues, from the transudates derived from the blood vessels of the conceptus and also through the unkeratinized foetal periderm. The allantoic fluid however, consists primarily of waste materials derived chiefly from the kidneys. Apart from this, the lining cells of the tissues of the conceptus are continuously exfoliated into the two fluid compartments throughout the foetal life.

In the present study, a total of 56 gravid genital tracts from goats were collected from the Kandy Municipal abattoir and transported immediately to the laboratory. The volume of amniotic and allantoic fluids, weights and crown-rump lengths (CRL) of the foetuses and other connected parameters were measured. A 10 ml sample of amniotic fluid was collected from each conceptus and centrifuged at 3000 rpm for 10 minutes and the cell deposits were smeared in two previously coated glycerine-albumen glass slides. The smears were fixed in a mixture of 1:1 95% ethyl alcohol and ether for 15 minutes and stained by the Papanicolaou's technique. Depending on the number of cells available in each smear, a total of 200 – 500 cells were counted in each slide using a light microscope. Based on their morphological and tinctorial properties, the cells identified were classified into three main classes, namely, cyanophilic, eosinophilic and orangeophilic cells and further subdivided into small and large and nucleated and enucleated cell types. The different cell types were expressed as a percentage of the total number of exfoliated cells counted in each sample.

In the young conceptuses of a CRL of <15 cm, the cynophilic cells were found to be the highest ranging from 49.3 – 59.9 % which gradually tended to decrease to a lower level of 18.9% at a CRL of 30 cm. Whereas the eosinophilic cells showed an increase with advancing age from 17.2% to 68.3% with increasing CRL of upto 30 cm. The orangeophilic cells remained at the lowest level ranging from 4.6% to 22.9% in all the samples studied. Among the cynophilic and orangeophilic cells, the small cell types were found to be predominant over the large cell types. However, the orangeophilic cells showed a mixed variation. The variations of the different cell types with advancing gestation are also presented graphically. However, the amniotic fluid volume showed a linear increase upto a CRL of 21 cm and tends to decrease before rising again after reaching a CRL of 27 cm.

This study showed that the composition of the cytopopulation changed with advancing foetal age and thus this could be used as a tool to estimate foetal maturity. It is also anticipated that the cellular composition of the foetal fluids would also change under pathological conditions and a measure of the different types of cells and also their cytogenetics could be used to diagnose abnormalities developing in the foeto-placental units.