FIBROBLAST GROWTH FACTORS 7 AND 10 ARE INCREASED IN PRETERM LAMBS TREATED WITH VITAMIN A DURING CONTINUOUS DRAINAGE OF LUNG AND AMNIOTIC LIQUIDS

Marlana Li, (Kurt H. Albertine, Ph.D.)
Department of Pediatrics Administration/Neonatology
University of Utah School of Medicine

One complication of pregnancy is the premature rupture of membranes that allows continuous drainage of lung and amniotic liquids. In our study, fetal lambs were used as a model for human fetuses. Catheters were put in the trachea and amniotic sacs of the lambs (115 days gestation; term is 147 days). The lambs then developed in utero for two weeks while the tracheal and amniotic liquids drained continuously by gravity. One group of lambs was treated with vitamin A, another group with saline. Two additional control groups corresponded to the age of the beginning (115 days gestation) and the end of drainage (136 days gestation).

To discern the effect of drainage, the lambs’ lungs were analyzed to find the distribution and abundance of fibroblast growth factors (FGF) 7 and 10 proteins, which are involved with lung development. The analyses included semi-quantitative densitometry of immunohistochemical results.

Results showed that continuous drainage of lung and amniotic liquids caused hypoplasia and inhibition of alveolar formation, as well as decreased expression of FGF 7 and 10 proteins. However, lambs treated with vitamin A had enhanced expression of FGF proteins. Thus, vitamin A increases FGF protein expression in the developing lung. So by increasing the levels of proteins that control alveolar formation (like FGFs), the incidence and severity of lung hypoplasia can be reduced.