

HANNOVER, Germany
18-23 August, 2002



XXII World Buiatrics Congress



121-415

Effect of transportation stress on the bronchoalveolar lavage fluid components in calves

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The effect of transportation stress on the content of bronchoalveolar lavage (BAL) of 20 male calves (16 Holstein-Friesian and 4 crossbred), 4-10 months old and average in weight of 160 kg was studied. The calves were healthy and had no previous history of respiratory tract diseases. During a period of 42 days experiment, the calves were kept indoors and were fed alfalfa hay and corn silage ad libitum. After a period of adaptation, on day 21, BAL and blood samples and nasal swabs were taken from all calves, then, the calves were divided into three groups: experiment (10 calves) which were transported and were deprived of food and water, control 1 (5 calves) which kept at stable and had free access to food and water during a 12-hour of transportation of the experimental group and control 2 (5 calves) which stayed at stable and were deprived of food and water at the same time. On day 26, BAL samples and nasal swabs were taken from control group. 1. Control group. 2 remained off-fed and the experimental group was transported for 12 hours (a distance of about 300 km.). Blood samples were obtained simultaneously from all groups at 0, 1, 3, 6 and 12 hours of transportation. On days 27, 31 and 42, all previous samplings (BAL, blood, and nasal swabs) were conducted on the experimental group and control group. 2. Cytologic, biochemical and bacteriologic examination of BAL and hematologic and biochemical examination of blood samples revealed that the number of RBCs, WBCs, neutrophils and the levels of cortisol, PCV, total protein and fibrinogen significantly increased, but lymphocytes and monocytes significantly decreased in the experimental group compared with control groups 1 & 2 on the day of transportation ($p < 0.05$). Also, regarding BAL content, total cell count, macrophages, neutrophils and total protein increased in the experimental group ($p < 0.05$). *Pasteurella multocida* was isolated from BAL of 3 calves in the experimental group after transportation. Alteration in bronchoalveolar lavage characters in this study may be due to depressed efficiency of mucociliary system and/or decrease amount of alveolar spatial surfactant which both of them may predispose the presence of *Pasteurella multocida* in bronchoalveolar fluid.

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122-704

Improved pulmonary adaptation in acidotic newborn calves

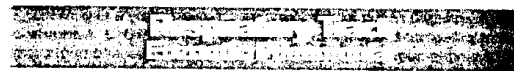
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Although the pulmonary system plays an important role in the rapid changes that occur during the successful transition from fluid filled fetal lung to air breathing organ, there is little published information about the pulmonary adaptation to extra-uterine life in newborn calves, especially during the first 24 h. The importance of this adaptation procedure is emphasized by the high rate of bovine perinatal mortality attributed to asphyxia. The adaptation of newborn calves to extra-uterine life was evaluated by measuring arterial blood gases, acid-base values, blood ions and lung mechanical function parameters in normal and acidotic calves during the first 24 h. Twenty seven Holstein Friesian newborn calves were divided into two groups according to their immediate post partum arterial blood pH values (Group A blood pH above 7.2: normal group; Group B blood pH between 7.2 and 7.0: acidotic group). Pulmonary function parameters were measured and arterial blood samples were analysed for blood gases, acid-base variables and ion concentrations immediately post partum (within 2 min) and 6 and 24 h after calving. Lung resistance and maximal difference between pressure maximum and pressure minimum (max Δ Ppl) decreased, while dynamic lung compliance increased significantly in both groups. Immediately post partum the lung resistance and max Δ Ppl were significantly higher in the acidotic group than in the normal group. The arterial blood pH progressively compensated with time in both groups during the first 24 h and there was no difference in arterial blood pH values between the two groups 6 h after birth. These results showed that the compensation of

acidosis was associated with the improvement in lung mechanics and these changes occurred mainly during the first 6 h of life. Moderate to pronounced acidosis did not affect the pulmonary adaptation negatively although some respiratory mechanics parameters (max Δ Ppl), blood pH and Ca²⁺ ion concentrations remained significantly different between the normal and acidotic groups at 24 h. This might be the result of over-compensation of acidosis and the interdependence between blood pH and Ca²⁺ concentrations.

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123-414

Incidence and economic impact of respiratory disorders of non-weaned calves in Charolais cow-calf farms of Western France

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This study aimed at assessing the economic features associated with respiratory disorders in calves before weaning. Data about treatments, mortality and growth retardation were recorded in 156 farms from September 1999 to March 2000. The sample consisted of Charolais cow-calf farms with > 30 cows calving per year. Economic modelling was made considering a typical intensive system: a cow-calf unit and a young-bull fattening unit (60 cows; yearly net profit close to 20,000 €). Herd-level incidence averaged 2.52 treatments for 1000 calf-days at risk. Lethality rate, severe growth retardation rate and moderate growth retardation rate were of 6.0%, 7.2 and 2.7% of the treated calves, respectively. Five groups of farms were identified, based on incidence and severity of consequences: (1) non affected; (2) very low incidence; (3) moderate incidence; (4) high incidence without severe consequences; and (5) high incidence and severe consequences. These groups gathered 21, 22, 17, 28, and 12% of the farms, respectively. Economic repercussions of respiratory disorders were of serious concern only for the last group which had a 20% decrease in net profit. BRSV vaccination was often implemented in the surveyed herds but was not found associated with a lower incidence of treatments in these herds. Therefore, the efficiency of the schemes implemented and also their profitability should be further investigated.

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124-448

The influence of various stress factors on respiratory disease in calves

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From December 1993 until December 1995 a field trial was executed in 19 family farms, in and around the village Beer Tuvia (Northern Negev). The trial monitored ca. 9000 calves. The relationship between various stress factors and the number and severity of bovine respiratory disease (BRD) was established. Between the ages of 2-4 months the calves were examined every two weeks. A clinical index (C.I.) was created to standardize results. In conformity with the practice applied by the Institute of Meteorology, summer days were days with a maximum temperature higher than 21°C, consequently days with a maximum temperature lower than 21°C, were winter days. Meteorological data: temperature, relative humidity, rain, heat-stress, were collected by the meteorological station of kibuts Negba (adjacent to the trial area). The various practices of raising the young calves were documented. Some results are: 1. The C.I. in calves raised on concrete slats after weaning was lower than in those raised on straw bedding, both in summer and in winter. 2. When comparing summer and winter the C.I. was lower in summer than in winter for calves raised on concrete slats. On straw bedding the C.I. was higher in summer than in winter. 3. In summer a lower C.I. was achieved when calves were raised in individual, elevated pens until weaning, while in winter raising in doghouses proved superior. 4. The