The bovine respiratory diseases are one of the leading causes of losses in young cattle. The purpose of this retrospective study was to describe the blood gas analysis results of calves with a clinical diagnosis of respiratory disease and to evaluate the prognosis values of these parameters in hospital conditions.

Records from calves between 1 week to 1 year of age presented to the veterinary teaching hospital of the University of Montréal with clinical signs of respiratory diseases between 2000 and 2005 were studied. Animals were included in the study if a blood gas analysis was available upon arrival. Based on the outcome, calves were divided into 3 groups: discharged from the hospital (DIS), euthanasied (EU) or natural death (DE). A linear model was used for assessing the association between blood gas parameters and outcome.

Thirty seven calves were included in the study, 30 were Holstein, 4 Ayrshire, 1 Charolais, 1 Blonde d'Aquitaine and 1 crossbreed. Age at presentation ranged from 8 days to 12 months (med=2.5mo). 34 calves had a final diagnosis of bronchopneumonia and 3 with other lower respiratory tract diseases. 22 calves were discharged from the hospital, 8 were euthanasied and 7 died. Treatment was attempted in 36 calves and consisted in antibiotic (n=36), non steroidal anti-inflammatory (n=25), steroidal anti-inflammatory (n=6) and intranasal oxygenotherapy (INO) (n=5). The INO did not affect the outcome of calves. Venous and arterial blood gas analysis was available in 30 and 9 cases respectively. Venous partial pressure of oxygen (PvO₂) was significantly lower for the DE group (25.8+/−2.5 mmHg) when compared to the DIS (33.7+/−2.6 mmHg; p=0.04) and EU (34.9+/−1.9 mmHg; p=0.02) groups. No difference was observed between L-lactatemia of DIS calves (4.0+/−1.7 mmol/L) and EU + DE calves (2.8+/−0.7 mmol/L) (p=0.54). No other significant differences were observed for venous or arterial pH, PaO₂, PaCO₂ or PvCO₂.

Despite severe blood gas changes, the short term prognosis was about 60% this referral population of calves with various respiratory diseases. The PvO₂ appeared the most useful parameters for prognosis in this study. Although lactatemia higher than 4 mmol/L has been previously described as a negative prognostic parameter in a previous study, it could not be applied on this particular study.

Keywords: Respiratory diseases; blood gas; lactate; prognosis