

Management of intra-partum foetal hypoxia due to prolonged second stage labour in a pug puppy

Abstract

A two year old female pug was presented to University Veterinary Hospital Kokkalai with difficulty in whelping. The animal was subjected to detailed clinico-gynaecological examination and ultrasonography. The second puppy was delivered per vaginally with the administration of ecbolics. Based on history, clinical examination, Apgar scoring and umbilical lactate values, the condition of the neonate was diagnosed as intra-partum foetal hypoxia due to prolonged expulsion time of the foetus. After drying the puppy, oxygen therapy was initiated with the help of a face mask at the rate of 1L/min and the neonates was maintained in an incubator maintained at 37 °C. The neonate had an uneventful recovery.

Keywords: neonate, apgar score, umbilical lactate, ultrasonography, ecbolics

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Introduction

Canine pregnancies are unique among veterinary domestic species as the whelping process is longer in duration and the neonates are highly influenced by the environmental factors.¹ Labour represents the most critical phase for the neonates and during the expulsion phase through vagina, canine neonates often experience a hypoxic condition, mainly due to a relatively short umbilical cord, traction of which may cause early separation of placenta, or rupture.² Hypoxia can also occur by the occlusion of umbilical circulation by compression of the cord between the foetus and the birth canal. In mild hypoxia, neonates are able to redistribute the blood flow to the heart, brain, diaphragm and adrenal glands. The major consequences for the puppies suffering from severe hypoxaemia will be bradycardia, increase in intestinal motility,³ amniotic fluid aspiration and damage of the intestinal mucosa and some other tissues of high oxygen requirements. The presence of lactate in excessive levels documented the use of secondary oxygenation pathways due to hypoxic events occurring during parturition.⁴ Foetal acidosis at birth resulted from hypo-perfusion of peripheral tissues, and that was due to an increase in the uterine activity during the first and second stage of labour.⁵ Metabolic acidosis in neonates was a result of accumulation of lactate in blood. Hence sampling of blood from the scalp of the foetus or umbilical cord to analyze lactate was considered to be an ideal method of identifying *intra-partum* foetal hypoxia. Healthy neonate was born with an umbilical lactate concentration lower than 5 mmol/L, with Apgar score higher than 9 and delivery time of less than 1h and 45min.⁶ Cyanotic or pale mucous membranes are indications for oxygen therapy, which can be administered via face mask.⁷

Case history and observations

A two year old female pug was presented to UVH Kokkalai with a history of severe straining and difficulty in whelping. The animal delivered a live puppy two hours before and was showing severe abdominal straining. Clinical examination of the bitch revealed an elevated heart rate, congested mucus membrane and panting type of respiration. Per-vaginal examination using gloved hands revealed the presence of a live foetus in birth canal. Ultrasonography of the bitch revealed the presence of a puppy with bradycardia (<150bpm). Dystocia was relieved with the use of ecbolics and a live foetus was delivered by manual traction. Clinical examination of the puppy

revealed bradycardia (135bpm) and cyanotic mucus membrane. The Apgar score of the puppy immediately after delivery was 7 and the umbilical lactate value was found as high as 16.8 Mmol/L. Based on history, clinical examination, Apgar scoring and umbilical lactate values, the condition was diagnosed as intra-partum fetal hypoxia due to prolonged expulsion time of the fetus (Figure 1 & Figure 2).



Figure 1 Umbilical vein lactate analysis.



Figure 2 Oxygen therapy using tight fixing oxygen mask.

Treatment and discussion

Immediately after delivery, puppy was vigorously rubbed with a towel and the fluids entrapped in the nostrils and mouth was removed with the help of a bulb syringe.⁸ After drying the puppy, oxygen therapy was initiated with the help of a face mask at the rate of 1L/min⁷ and the neonate was maintained in an incubator maintained at 37 °C. As the cyanosis of the mucus membranes disappeared, puppy was treated orally with 5 drops of Dextrose 25% solution. Administration of oxygen by face mask corrected the myocardial hypoxia⁹ and the heart rate of the puppy increased to a normal level. The neonate was maintained in the incubator until it was clinically normal and neonate had an uneventful recovery.

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None

Conflicts of interest

The author declares that there is no conflict of interest.

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