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A STUDY OF ARRHYTHMIAS IN
THOROUGHBRED NEWBORN FOALS IMMEDIATELY AFTER BIRTH

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The study of equine neonatology is of recent origin and the assessment of newborn foals is not yet adequate. Recently the existence of the arrhythmias in thoroughbred newborn foals immediately after birth has become clear. However, it is still unknown in detail. In order to clarify the frequency, time and mechanism of the generation of equine neonatal arrhythmias, therefore, we carried out the continuous recording of fetal electrocardiograms (FECG) and neonatal electrocardiogram (NECG) by using telemetry before and during parturition and also after birth. Changes of fetal heart rate (FHR) during parturition were calculated from the FECG in 34 spontaneous cases. The variability of the FHR showed a tendency to become smaller toward the rupture of the allontonic fluid. Neonatal arrhythmias were recognized in 34 of 40 (85.0%) newborn foals immediately after birth. Of, 40 newborn foals, respiratory arrhythmia (RA) was observed in 10, supraventricular premature contraction (fixed coupling) in one, paroxysmal atrial fibrillation (PAF) in 22 and paroxysmal ventricular-tachycardia in 3. Of the neonatal arrhythmias, PAF was most commonly observed. The duration of PAF was 8.9 ± 12.9 (Mean \pm SD) minutes. It was suggested that the onset of PAF was within a few minutes before or after the delivery. In one case with mild dystocia, severe fetal arrhythmia was recognized. Atrial premature contraction (APC) was observed in 10 of 22 newborn foals with PAF. Cyanosis of the buccolingual membrane, observed in 19 newborn foals, was found at delivery and its severity had a correlation with the degree of the arrhythmias. In an experiment inducing an artificial arrhythmia in an equine newborn 3 days old, first RA then APC and finally PAF were observed when the duration of the respiratory suppression was extended. It was suggested that the development of hypoxia was relative to the arrhythmias. From the results in the cases of spontaneous parturition and the experiment, it was considered that a hypoxic condition during delivery may contribute to the occurrence of neonatal arrhythmias in horses.