

Carotid blood flow changes with behavioral states in the late gestation llama fetus in utero

Blanco, C. E.

Giussani, D. A.

Riquelme, R. A.

Hanson, M. A.

Llanos, A. J.

This study tested the hypothesis that in the llama fetus changes in cerebral blood flow are closely associated with changes in cerebral oxidative metabolism such as occur during transitions between electrocortical states. For the first time reported in any species, instantaneous changes in common carotid blood flow, employed as a continuous index of cerebrovascular perfusion, were related to instantaneous changes in electrocortical activity. Three late gestation fetal llamas were surgically prepared under general anesthesia with vascular catheters, a tracheal and amniotic catheter, and with electrodes implanted to monitor the fetal electrocorticogram (ECoG). In addition, Transonic flow probes were placed around a common carotid artery and a femoral artery. At least 4 days after surgery fetal arterial blood, amniotic and tracheal pressures, carotid and femoral blood flows and the fetal ECoG were recorded continuously. Our results suggest a close association between increases in common c