Foetal stress responses to euthanasia of pregnant sheep.

The study was designed to evaluate foetal stress responses in midgestational (G1) and near-term (G2) pregnant ewes euthanized either by intravenous administration of pentobarbital (group P) or electrical current (group E). After the ewe’s death foetal lambs were delivered by caesarean section and remained attached to the ewe by the umbilical cord. Foetal vitality, reflexes, heart rate, blood pressure, rectal body temperature, venous pCO2, pH and lactic acid were monitored. Additionally, foetal plasma concentrations of pentobarbital were determined in group P. Neither electrocution of the pregnant ewe nor euthanasia of the dam by pentobarbital caused cardiac arrest in foetuses within 25 minutes. G1-foetuses of group P lost significantly faster all body movements and reflexes whereas G2-foetuses of group P took significantly longer in reaching a venous pH 13.33 kPa as well as a blood lactate concentration of > 8 mmol/l. Since no scientific evidence has been found yet to what extent the foetal lamb can experience pain and can suffer, the prolonged process of dying for group-E-foetuses due to hypoxia is inconsistent with criteria for humane euthanasia and animal welfare. The administration of pentobarbital to the pregnant ewe, however, might have the potential to induce foetal anaesthesia thereby satisfying the main aspects of the definition of humane euthanasia to a greater extent.