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Pain perception at slaughter

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Abstract

Recent developments related to quantitative analysis of the electroencephalogram (EEG) have allowed the experience of pain to be assessed more directly than has hitherto been possible. Variables derived from the EEG of animals anaesthetised using our minimal anaesthesia model respond to noxious stimulation in a manner similar to those from conscious animals. This methodology has been used in a variety of applications including the evaluation of analgesic options for painful husbandry procedures and investigation of developmental aspects of the perception of pain. We have now applied the minimal anaesthesia model to the question of the slaughter of calves by ventral-neck incision. A series of studies evaluated the magnitude of EEG response to the noxious stimulus of ventral-neck incision and the physiological mechanisms that underlie this response. We also investigated the EEG effects of stunning by non-penetrating captive bolt and the ability of such stunning to ameliorate the response to ventral-neck incision. The results demonstrate clearly, for the first time, that the act of slaughter by ventral-neck incision is associated with noxious stimulation that would be expected to be painful in the period between the incision and subsequent loss of consciousness. These data provide further support for the value of stunning in preventing pain and distress in animals subjected to this procedure. We discuss the development of the minimal anaesthesia model and its adaptation for use in the investigation of slaughter by ventral-neck incision as well as considering the contributions of these studies to the ongoing development of international policy concerning the slaughter of animals.

Keywords: *animal welfare, cattle, EEG, pain, slaughter, stunning*