

Electroencephalographic responses to neck cut and exsanguination in minimally anaesthetized goats

ABSTRACT

Conscious animals typically experience sensory (nociception) and emotional pain, whereas unconscious animals that were minimally anesthetized would experience minimal emotional pain. To determine whether 'silencing' the emotional component through a minimally anesthetized model would minimize stress response, and thus improve animal welfare, this study aimed at comparing changes in electroencephalographic (EEG) activities associated with possible noxious stimuli following neck-cut slaughter in conscious non-anesthetized versus minimally anaesthetized Boer cross-bred goats. Ten bucks were randomly assigned to two groups of five animals each, and subjected to neck-cut slaughter when fully conscious (HS) or under minimal anaesthesia (AS) and exsanguinated. The anaesthesia was induced with propofol (5 mg/kg) administered to effect by rapid injection into a cephalic vein and maintained with halothane in 100 % oxygen. Changes in the root mean square (RMS) for each of alpha, beta, delta and theta waves, median frequency (F50) and total power of the EEG (P_{tot}) were compared in each group before and after neck cut and between groups following treatments. Electroencephalographic parameters did not differ between goats that were fully conscious or slaughtered under minimal anaesthesia. These findings showed that the noxious stimuli from neck cut were present in both conscious and minimally anaesthetized goats. Most importantly, the presence of emotional pain and nociception did not affect the extent of electroencephalographic responses significantly compared with animals that were experiencing nociception only.

Keyword: Brain activity; Propofol-halothane anaesthetic; Noxious stimuli; Slaughter