

LETTERS TO THE EDITORS

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Possible effects of Environmentally Stimulated Endogenous Opiates

(Accepted 10 March 1982)

Dear Sirs:

IN RECENT YEARS, while the analgesic effect of electrically stimulated endogenous opiates has been appreciated with particular reference to pain relief mechanisms through the inhibition of pain transmission (Sn79), so far as we are aware, there has been no investigation of the long-term effects of exposure to environmental conditions capable of giving rise to the continued production of endogenous opiates in the human body.

The values of current involved range from 20 μA for partial anaesthesia (in teeth) to 60 μA for full effect (RE74). It is quite possible to experience currents in excess of these values in environmental conditions such as in the proximity of high voltages. The current induced in a human body is about 15 μA per kV m^{-1} for 50-60 Hz fields (Br81, Wa80).

"The analgesic effect of acupuncture is the result of interaction between impulses from the origin of pain and afferent impulses from the acupuncture point and this interaction takes place at different levels of the central nervous system. For acupuncture to be effective in relieving pain, the involvement of the nucleus raphe magnus and endogenous opiates is required" (Chu80).

The 2-200 Hz range of frequencies has been reported to produce electroacupuncture analgesia; around 200 Hz the effects are attributed to the production of met-enkephalin and are not blocked by naloxone, while effects due to frequencies in the 2-6 Hz range have been reported to be blocked in part by naloxone and are attributed to the

production of β -endorphin (BMJ81). However, it should be pointed out that Chapman (Cha80) has assessed evoked potentials with acupuncture analgesia and attempted reversals with naloxone, he concluded that the findings contribute to the growing evidence that acupuncture stimulation significantly reduces pain sensitivity, but that they do not support the hypothesis that endorphin release is a mechanism by which acupuncture exerts analgesia.

Whatever substances are produced in electro-anaesthesia, these are unlikely to remain effective in the body for more than half an hour, so that there is little occasion for their long-term effects, addiction and withdrawal properties, to have been investigated. However, this is just the situation which may be operative under environmental stimulation an production of endogenous opiates. Thus it is possible that the continuous production of β -endorphin by electric currents induced in the body for extended periods by environmental circumstances might give rise to unpleasant symptoms only on withdrawal from the field or the cessation of the current. The reported symptoms (BMJ80, Fo73) appear to have some similarity with those described in respect of the chronic abuse and withdrawal from morphine (Ma69). The onset of weather conditions which could greatly reduce the body currents (such as cold dry frosty weather and fog or low cloud) could also produce withdrawal effects. Thus it would be pointless to merely measure the ambient fields and currents or to look for biochemical anomalies in the body only at such times as the symptoms are present since the body would then be approaching its more normal biochemical state.

This may not only be a human physiology problem, since we have heard that cattle grazing under high voltage power lines do not get on with the job

of making milk. The cover picture from (RGE 76) is intended to show an absence of ill effects on the cattle beneath overhead power lines; by our submission it shows a field of "junkie" cows!

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