CORRESPONDENCE

INTRATHecal KETAMINE IN RATS

Sir,—We have read with interest the article by Ahuja (1983) entitled “Analgesic effect of intrathecal ketamine in rats”, and would like to bring two aspects of the above to your notice.

In the previous communication referred to by Dr Ahuja (Mankowitz et al., 1982) we reported on the pain-relieving properties of extradural ketamine in patients suffering from cancer pain. We have since utilized extradural ketamine for pain relief after operation in a pilot study involving four patients. Even when the dose of extradural ketamine was increased to 50 mg, analgesia was usually inadequate and certainly not as effective as extradural morphine for postoperative pain relief (Rubin et al., 1983). The reason for this discrepancy could lie in the fact that the pathways of chronic pain are very different from those of acute pain.

As to the possible toxic effects of intrathecal ketamine, we concluded in a separate animal study (Brock-Utne et al., 1982) that the drug would seem safe as judged by examination of spinal nerve roots of baboons.

J. G. Brock-Utne
J. W. Downing
E. Mankowitz
J. Rubin
Congella, S. Africa

REFERENCES


EXERCISE, CYCLIC AMP AND MALIGNANT HYPERPYREXIA SUSCEPTIBILITY

Sir,—In their study of blood concentrations of cyclic AMP in malignant hyperpyrexia-susceptible (MHS) subjects, Drs Staniec and Stefano (1984) demonstrated higher cyclic AMP concentrations in the MHS group during and following maximal exercise. There are, however, problems with their programme of exercise which detract from the validity of their findings and from their conclusions.

Both groups were given the same work loads (rate and gradient of a treadmill) and these were increased by degrees which were unspecified, but which appear to have been the same in both groups. Individuals vary markedly in their degree of physical fitness or maximal work capacity (maximal aerobic capacity, maximal oxygen uptake or 

\[ V_{O_2 \text{max}} \]

proportions of their measured 

\[ V_{O_2 \text{max}} \]

prescribed work loads to perform that take up comparable proportions of their measured 

\[ V_{O_2 \text{max}} \]

If it is impractical or undesirable to measure 

\[ V_{O_2 \text{max}} \]

the work loads are prescribed to produce, for subjects of the same age, comparable heart rates. For a given type of exercise there is a linear relationship between oxygen consumption and heart rate and the conventional view is that, in a healthy individual, 

\[ V_{O_2 \text{max}} \]

is limited by the maximum heart rate he can achieve. Maximal heart rate is normally a function of age (Lange-Anderson et al., 1971). Staniec and Stefano did not exercise their subjects according to their 

\[ V_{O_2 \text{max}} \]

as a result of which their MHS subjects exercised to their maximum over a significantly shorter period than did the controls.

The metabolic processes underlying exercise are a function of the duration and intensity of the exercise and in the early part of any exercise period are in an unstable state of flux (Felg and Koivisto, 1979). The work presented by Drs Staniec and Stefano could be interpreted as merely demonstrating that their MHS subjects were probably less fit (had a lower 

\[ V_{O_2 \text{max}} \]

than their controls, and that the greater concentrations of cyclic AMP in the MHS group merely reflect this, along with the fact that the measurements in this group were started earlier in a relatively more unstable part of the exercise period than in the control subjects.

I. T. Campbell
Liverpool

REFERENCES


EXERCISE, CYCLIC AMP AND MALIGNANT HYPERPYREXIA SUSCEPTIBILITY

Sir,—In their study of blood concentrations of cyclic AMP in malignant hyperpyrexia-susceptible (MHS) subjects, Drs Staniec and Stefano (1984) demonstrated higher cyclic AMP concentrations in the MHS group during and following maximal exercise. There are, however, problems with their programme of exercise which detract from the validity of their findings and from their conclusions.

Both groups were given the same work loads (rate and gradient of a treadmill) and these were increased by degrees which were unspecified, but which appear to have been the same in both groups. Individuals vary markedly in their degree of physical fitness or maximal work capacity (maximal aerobic capacity, maximal oxygen uptake or 

\[ V_{O_2 \text{max}} \]

and hormonal response to exercise between racing cyclists and untrained individuals. J. Physiol. (Lond.), 258, 1.

Sir,—We would like to thank you for an opportunity to reply to Dr Campbell’s letter. Dr Campbell has expressed concern regarding our programme of exercise. However, we believe that most of his reservations have been addressed fully in our article (Staniec and Stefano, 1984). Dr Campbell’s critique of the exercise programme is based on two assumptions: (1) we were comparing professionally trained individuals with untrained subjects; (2) we did not use the maximal predicted heart rate as the measure of the 

\[ V_{O_2 \text{max}} \]

Obviously, there may be a significant difference in the responses to exercise between professionally trained and untrained individuals. Certainly, “for a given type of exercise there is a linear relationship between oxygen consumption and heart rate” and “maximal heart rate is normally a function of age”.

Our volunteers were selected from college students carefully matched with malignant hyperthermia (MH)-susceptible