

August 26, 2003

People for the Ethical Treatment Of Animals (PETA)

501 Front Street

Norfolk, VA 23510

To Whom It May Concern:

I have reviewed the materials regarding the neuroprotection/stroke research being conducted on baboons at Columbia University. Specifically, I read the experimental protocol and the post—surgical records. The opinions I express below in this letter are my own and are based upon my credentials as a board- certified veterinary anesthesiologist and behaviorist

Was adequate and appropriate analgesia provided for during the experimental surgery?

The answer to this question is a categorical no. It appears that the anesthetic protocol was designed by a human anesthesiologist who did not take into account the difference in potencies of anesthetics between humans and non—human primates. First, let me explain the MAC value concept of an inhaled anesthetic. The MAC (minimum alveolar concentration) is the alveolar concentration of the anesthetic that prevents movement in response to a surgical stimulus in 50% of test subjects. The MAC value of isoflurane in humans is 1.28% but in monkeys (Rhesus) it has been found to be 1.46%. If you want to prevent movement in all patients you need to supply 1.3 multiples of MAC i.e. an alveolar concentration of 2% isoflurane for a monkey. To achieve an alveolar concentration of 2% isoflurane, the vaporizer concentration would need to be even higher as there is gradient into the lungs. Let's say the vaporizer concentration should be in the order of 2.2%. During the procedure in question, the vaporizer concentration of isoflurane was lowered to .2% i.e. less than 10% of what would be needed to ensure no movement in response to surgical stimulation. The researchers might argue that isoflurane was not the only anesthetic used and that is true. Nitrous oxide was also used at a 50% concentration. The MAC, or MAC value, of nitrous oxide in humans is 101% so supplying 50% nitrous oxide would supply approximately 1/2 of a MAC. However, the MAC value of nitrous oxide in monkeys has been found to be closer to 200%, so 50% nitrous oxide would only supply 1/4 of a MAC. MAC's are addable so that if you add approximately 1/10th of a MAC of isoflurane to the 1/4 of a MAC of nitrous oxide, you end up with about 1/3 of a MAC. What this means is that the anesthetic concentrations of the two inhaled agents combined were inadequate for surgical anesthesia. In addition to the inhaled anesthetics, an opioid was infused to control pain. While there is no doubt that the patients were better off receiving fentanyl than not, the analgesia supplied by fentanyl is incomplete. Furthermore, it would not contribute much toward maintaining unconsciousness and thus preventing awareness. In this state, the monkeys were paralyzed and ventilated to prevent movement but, it is my opinion, that they were likely conscious at this time. Although ketamine was used as a premedicant and lidocaine was infused in the periorbital region, it is still my opinion that the anesthetic was inadequate to prevent awareness and that the analgesia was inadequate to prevent the perception of pain during extirpation of the eyeball and some other aspects of the surgery. The lack of understanding of animal anesthesia is apparent from the protocol and furthermore the researchers did not even know how to spell the word isoflurane correctly.

- Was adequate post-surgical care given to the baboons?

It is my opinion that the baboons were not treated humanely or in accordance with the protocol in the post— surgical period. The researchers' description of how the baboons would act in the recovery period was, to say the least, euphemistic. Instead of being merely incapacitated by mild weakness on one side of the body, these baboons were desiccated by the surgical process and the resultant pain and disorientation. One was found dead, one could not move at all, two could not sit up, most would not eat or drink, one had respiratory depression, and one had extensive surgical complications. These animals were clearly in great pain and were suffering, refused to eat, and many could not or would not move around. Instead of constantly monitoring baboons that were failing or dispatching them humanely as called for in the protocol, it seems that the researchers had little compassion for the animals, failed to monitor or support them adequately and only euthanized them when they are already in extremis. Two were simply found dead. Was this care in accordance with the protocol? The answer is no. Did the baboons experience pain and distress, either during or after surgery? Yes, to both questions.

- Would I consider these stroke experiments properly conducted scientific tests?

I am only qualified to discuss the anesthesia, analgesia, and behavior of the baboons but believe strongly that an experiment conducted with inadequate anesthesia, analgesia, and post—operative care is unlikely to produce meaningful results, quite apart from the fact that it is inhumane.

- Do I believe that the experiment was cruel and unjustified and contrary to the standards accepted by the veterinary medical community?

Again, I would have to say yes. Post surgical care was totally inadequate. The experiment was cruel and not up to the standards of the veterinary medical community.

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