Editorial

Local anesthesia in simulated microgravity: Clinical Observations from a Randomized Crossover Study in Human Volunteers

Long duration missions such as Mars-type missions require planning for the administration of anesthesia to patients adapted to microgravity potentially in a highly autonomous nvironment. The experience with the primates of the BION 11 mission suggests that microgravity xposure may alter the response to anesthesia. Furthermore, information on the pharmacodynamic and pharmacokinetic changes caused by the physiologic adaptation of humans to microgravity is limited for intravenous drugs such as anesthetics especially local anesthesia. The effects of the local anesthetic Xylocaine® (lidocaine i e The local anesthetic solution consisted of 0.33% lidocaine, 0.07% sodium bicarbonate, and 1:600,000 epinephrine) were studied in five volunteers ranging from 21-25 years and matched to astronauts in health status and body mass index. Because of safety concerns, Xylocaine® (lidocaine) was administered in 1.2 cc for inferior alveolar nerve block. Each subject served as his/ her own control in a randomized cross-over design that compared responses at baseline with those after 12 hours of antiorthostatic bed rest. A second group of volunteers (n=10) was studied while undergoing a local anesthetic of 4 minutes duration. Neurocognitive recovery was compared to a control group (n=10) that underwent testing only, but neither local anesthesia administration nor antiorthostatic bed rest. All volunteers in the local anesthesia groups completed the study without complications. Antiorthostatic bed rest led to typical mild symptoms of back pain, a sensation of fullness of the head/ headache .For both This clinical assessment was done by tipping of mandibular molar with mouth mirrors and shows the expression of patients. Local anesthesia groups the anesthetic effect of local anesthesia was similar in normal gravity and simulated microgravity. My results show that adaptation to microgravity, simulated by antiorthostatic bedrest, neither raises novel safety concerns nor causes clinically significant changes in the anesthetic properties of Xylocaine® (lidocaine).

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