

Abstracts of Session 6b

Recovery and street versus home fitness criteria

6b1

General anesthesia provoked a long-lasting shift in circadian sleep-waking rhythm

Etienne Challet^a, Laure Pain^b, Paul Pévet^a, Philippe Oberling^b

^aULP/CNRS 7518, Faculté de Médecine, 11 rue Humann, F-67000, Strasbourg, France

^bGRERCA, INSERM U405, Faculté de Médecine, 11 rue Humann, F-67000, Strasbourg, France

In ambulatory surgery, delayed cognitive recovery may prevent the patients returning immediately to their preoperative level. In this field, tiredness and concomitant impaired vigilance the days following surgery are complaints widely reported by outpatients. We were wondering to which extent general anesthesia by itself could be in part responsible for such complaints. Given that general anesthesia is associated with modifications of multiple cerebral functions, it might theoretically alter biological rhythms controlled by the circadian clock (located in the hypothalamus). Therefore, we asked whether or not general anesthesia affects the circadian sleep-wake rhythm in patients. In a first approach to answer this question, we used a

standard animal model to assess possible effects on the circadian timing system. In rats exposed to constant darkness, free-running circadian rhythm of locomotor activity (reflecting sleep-wake rhythm) was monitored before and after a short-lasting anesthesia (30–40 min) using propofol, an anesthetic agent frequently used for ambulatory surgery. Our results evidenced that, when administered at the onset of the daily active period, a brief propofol anesthesia was responsible for a 50-min phase-advance in circadian sleep-wake rhythm. This chronobiotic effect was observed following propofol anesthesia performed during the activity phase in rats. Such a phase-advance could lead to a temporary desynchronization similar to that occurring during a jet-lag. The relevance for outpatients of this chronobiotic effect of anesthesia is certainly warranted and this is currently under investigation because recovery from ambulatory anesthesia may be improved by taking into account this phenomenon. Such an approach gives us the option of resetting the circadian pacemaker (resynchronization) using pharmacological or other (natural and artificial light) tools.

This project was supported by Institut Fédératif de Recherches 37, Neurosciences, ('Soutien aux sciences du vivant', MENRT/INSERM 2000).