

Letter to the Editor

Effects of zolpidem and temazepam on driving ability

To the Editor: It is well known that a substantial number of patients use their medication at inappropriate times or use higher dosages than recommended. Hence, the study undertaken by Partinen and colleagues [1] has an important objective: examining the effects of zolpidem and temazepam on driving ability when used during the night.

In the abstract of their article, the authors strongly advocate against the late intake of *hypnotics* if patients intend to drive a car early the next morning. We think it is unacceptable to extrapolate the results with zolpidem and temazepam to all hypnotics. Data from on-the-road driving tests during normal traffic show that not all hypnotics produce driving impairment when administered during the night or in higher dosages than recommended [2]. In this standardized test, subjects are instructed to drive with a steady lateral position and constant speed over a 100-km highway circuit. The amount of weaving of the car, the standard deviation of lateral position, is the primary parameter of the test. Laboratory tests, closed-road tests, and driving simulators poorly predict actual driving performance [3–4]. This is not surprising since for many of these tests the relationship to normal driving is unclear. For example, Partinen and colleagues refer several times to results obtained with the digit symbol substitution test. However, although this test measures a combination of several psychological skills and abilities (e.g. reaction speed, working memory, eye–hand coordination) its relationship to actual driving is unclear. Hence, results from this test cannot be regarded as supportive evidence to driving ability.

An important part of real driving is the interaction with other drivers and the occurrence of sometimes unexpected or even risky situations. This interaction is absent in closed-road studies, such as that performed by Betts and Birtle [5], when examining the effects of temazepam (20 mg). Two short tasks were performed. In the weaving task, subjects had to maneuver the car between bollards as fast as possible. In the second task, subjects had to maneuver a car over a circuit comprising passable and non-passable gaps. Both tasks can hardly be regarded as normal driving behavior.

Unfortunately, Partinen and colleagues [1] did not discuss two important studies determining actual driving

performance during normal traffic [6–7], whereas another was misinterpreted as driving simulator study [8].

O'Hanlon and Volkerts [7] examined the residual effects of temazepam (20 mg) after two, four and seven nights of treatment in 12 females with a history of insomnia and hypnotic treatment. On-the-road driving tests were performed 10–11 and 16–17 h after bedtime administration. On all occasions, temazepam (20 mg) did not significantly impair driving ability.

Vermeeren and colleagues [8] examined the effects of zolpidem (10 mg) on driving ability in 17 women with a history of insomnia and hypnotic treatment, 10–11 h after bedtime administration. This study was performed on the road during normal traffic applying the standardized driving test methodology. Driving performance after zolpidem did not differ significantly from placebo.

Verster and colleagues [6] examined the effects of zaleplon (10 and 20 mg) and zolpidem (10 and 20 mg) on driving ability 4–5 h after middle-of-the-night administration in 30 healthy volunteers. Zaleplon did not significantly affect driving ability. In contrast, after zolpidem driving performance was significantly impaired in a dose-dependent manner.

From these studies, it must be concluded that:

- (1) Driving a car is safe during the day when zolpidem or temazepam are administered at bedtime in their recommended dosages (10 and 20 mg, respectively).
- (2) Driving is unsafe when zolpidem is administered during the night.
- (3) No data is available on temazepam regarding middle-of-the-night administration.
- (4) Zaleplon does not impair driving ability when administered at bedtime or during the night.

References

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